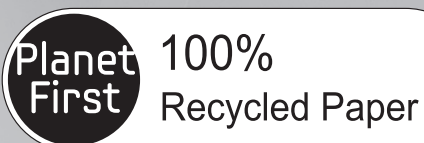


DVM PLUS III HR
RD***VRXF Series

Air Conditioner installation manual



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safety information

SAFETY INFORMATION

Before installing an air conditioner, please read this manual thoroughly to ensure that you know how to safely and efficiently install a new appliance.

* DVM PLUS IIIHR air conditioner uses R410A refrigerant.

- When using R410A, moisture or foreign substances may affect the capacity and reliability of the product. Safety precautions must be taken when installing the refrigerant pipe.
- The designing pressure of the system is 4.1MPa. Select appropriate material and thickness according to the regulations.
- R410A is a quasi-azeotrope of two refrigerants.
Make sure to charge with liquid phase when filling refrigerant.
If you charge gaseous refrigerant, it may affect the capacity and reliability of the product as a result of change formation of the refrigerant.

* Connect the indoor units for R410A refrigerant. Check whether the indoor units can be connected with the product's catalogue. (When incorrect indoor units are connected, they cannot operate normally.)

SEVERE WARNING SIGNS

If you don't follow the safety precautions, you may get the risk of serious wound or death.

The installation must be done by the installer or its service agent or a qualified person in order to avoid a hazard.

- Installation by an unqualified person may cause a water leakage, electric shock or fire and so on.

The electric work must be done by service agent or qualified persons according to national wiring regulations and use only rated cable.

- Use certified power cable in the market suggested here and do electric work according to installation manual otherwise, electric shock or fire may occur.

Install the outdoor unit correctly according to the installation manual.

- An incorrect installation may cause a water leakage, electric shock or fire and so on.

Manufacturer is not responsible for accidents due to incorrect installation.

When installing the unit in a small room, take measures in order to keep the refrigerant concentration from exceeding allowable safety limits in the event of a refrigerant leak.

- Excessive refrigerant concentration in a closed room can lead to oxygen deficiency.

Use certified parts in the market and supplied parts from the factory.

- If you don't use the certified parts and tools, it can cause trouble to the air conditioner and bring into injury.

Install the outdoor unit on a hard and even place that can support its weight.

- If the place cannot support its weight, the outdoor unit may fall down and it may cause injury.

Fix the outdoor unit securely on foundation to resist strong wind or earthquake.

- If the outdoor unit is not properly fixed, it turns over and accidents may occur.

Fix power cable on fixture of outdoor unit securely not to be pulled out by external force.

- If fixing is incomplete, it can cause trouble with a heat generation, electric shock or fire and so on.

Arrange the cables between the indoor and outdoor unit after connecting. Attach the cover securely so that the electrical component box cover does not get loosen.

- If the cover is attached incompletely, it can cause trouble with a heat generation, electric shock or fire of the terminal board.

Install MCCB and ELB according to installation manual.

- If you do not install the MCCB and ELB, electric shock or fire may occur.

The unit must be plugged into an independent circuit if applicable or connect the power cable to the auxiliary circuit breaker. An all pole disconnection from the power supply must be incorporated in the fixed wiring with a contact opening of >3mm(1/8").

If any gas or impurities except R410A refrigerant come into the refrigerant pipe, serious problem may occur and it may cause injury.

Make sure that there is no leakage after installation.

- Toxic gas may generate when refrigerant gas contacts with fire.

Leak test must be done using only Nitrogen gas.

When the product operates in heat mode during winter time, it operates protection mode when the outdoor temperature drops below 0°C. Therefore, supply the power during winter time. If the power is not supplied, compressor protection mode will not operate and cause product malfunction.

Do not modify the product on your own.

- Potential risk of electric shock, fire, product failure or injury.

CAUTION SIGNS

If you don't follow the safety precautions, you may get the risk of injury or loss of property.

Make sure of a earthing.

- Do not connect the earth wire to the gas pipe, water pipe, lighting rod or telephone wire. If earthing is incomplete, electric shock or fire may occur.

Do not connect the heater to the outdoor unit and do not install altered duct as you please.

- The capacity may reduce, electric shock or fire may occur.

Make sure that the condensed water dripping from the drain hose runs out properly and insulate the drain pipe so that frost does not generate.

- Household goods may get wet if the drain pipe is not properly installed.

Install the indoor unit away from lighting apparatus using the ballast.

- If you use the wireless remote control, it may not operate normally.

Do not install the air conditioner in following places.

- The place where there is mineral oil or arsenic acid.
Those parts may get damaged due to burned resin.
The efficiency of the heat exchanger may reduce or the air conditioner may be out of order.
- The place where corrosive gas such as sulfurous acid gas generates from the vent pipe or air outlet.
The copper pipe or connection pipe may corrode and refrigerant may leak.
- The place where there is a machine that generates electromagnetic waves.
The air conditioner may not operate normally due to control system.
- The place where there is a danger of existing combustible gas, thinner or gasoline is handled.
- The place where carbon fiber or flammable dust is.
- The place where like spa and shore.

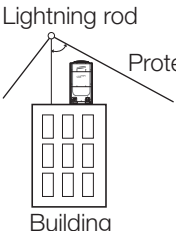
safety information

CAUTION SIGNS

Install the power cable and communication cable of the indoor and outdoor unit at least 1.5m(5') away from the electric appliances and install it at least 2m(6.5') away from the cable from the lightning rod.

- Noise may heard depending on the electric wave though the cables.

Install the outdoor unit within the angle of 25~55° depending on the building height as below table.

Building height	Protective angle	Remarks
Below 20m(65ft)	55°	 Lightning rod Protective angle: 25~55° Building
Below 40m(131ft)	35°	
Below 60m(196ft)	25°	

Changes in DVM PLUS III HR comparing with conventional models(DVM PLUS II)

- Use R410A refrigerant.
- Check indoor units, distributor kits, etc which are connected with DVM PLUS III HR are compatible with DVM PLUS III HR or not.
- Version of AVX*****E/ND*****A and higher is available.
- Make sure the combination method of outdoor units is different from DVM PLUS II.
- The length of maximum piping, level difference, the quantity of connectable indoor units, the installation at the outdoor joints and the outdoor unit combinations are different from the conventional models.
- Outdoor joint of gas side pipe should be installed horizontally due to the combination of variable units when the height of the main pipe is lower than the outlet of the pipe of the outdoor unit. The Installation of the liquid pipe and high pressure gas pipe are the same.
- If the pipe length between outdoor units becomes 2m(6.5') or more, install vertical trap to upstream to prevent oil from getting accumulated in the pipes of the outdoor unit in case of part load operation with the states which the last outdoor unit stops operating.

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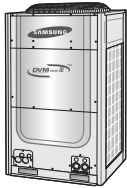
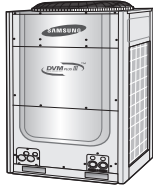
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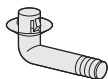
preparing the installation

SHAPE OF THE OUTDOOR UNIT

Shape		
Heat Pump	RD075/100VRX*	RD125VRX*

ACCESSORIES

- Keep supplied accessories until the installation is finished.
- Hand the installation manual over to the customer after finishing installation.
- The quantities are indicated in parentheses.

Installation manual (1)	Drain plug (2)	Cable tie (4)	Cap drain (2)
			
-	-	-	For closing the drain hole

Optional accessories

- The following accessories are needed when installing the outdoor and indoor unit.

Type	Model	Capacity of outdoor unit
Y-joint	MXJ-YA1509*	51MBH and below
	MXJ-YA2512*	51~138MBH
	MXJ-YA2812*	138~160MBH
	MXJ-YA2815*	160~240MBH
	MXJ-YA3119*	240~336MBH
	MXJ-YA3819*	336~438MBH
Y-joint (Only for DVM PLUS III HR module)	MXJ-YA1500*	80MBH and below
	MXJ-YA2500*	80~240MBH
	MXJ-YA3100*	240~468MBH
Header joint	MXJ-HA2512*	160MBH and below
	MXJ-HA3115*	160~240MBH
	MXJ-HA3819*	Over 240MBH
Outdoor joint	MXJ-T3819*	12~30Ton
Outdoor joint (Only for DVM PLUS III HR module)	MXJ-T3100*	12~30Ton

- When the indoor units without EEV such as wall mounted and ceiling type are installed, it is necessary to install distribution kits.
- It is necessary to install MCU when HR units are installed.
- Distribution kits and MCU should be purchased from the factory.

OUTDOOR UNIT COMBINATION

- Make sure an indoor unit is compatible with DVM PLUS III HR
- Indoor units can be connected within a following table range.
- If the total capacity of the connected indoor units exceeds the suggested guideline, the indoor unit cooling and heating capacity may decrease.
- Total capacity of the connected indoor units can be allowed to be from 50% to 130% over outdoor capacity. (Depending on operation condition, the ratio of total capacity of the connected indoor units over outdoor unit capacity should be considered carefully.)

$$0.5 \times \Sigma (\text{Outdoor unit capacity}) \leq \text{Total capacity of the connected indoor units} \leq 1.3 \times \Sigma (\text{Outdoor unit capacity})$$
- Up to 40 indoor units can be connected to an outdoor unit. The communication address of the indoor unit sets following the quantity of the maximum indoor unit connected.
- The minimum capacity of the indoor unit is 6.0MBH.



Make sure to follow the table for combination installation of outdoor units.

1. Basic models

Classification	Capacity (Ton)	Capacity (HP)	Model	Total capacities of the connectable indoor units (MBH)	Maximum number of connectable indoor units
Single unit	6	7.5	RD075VRXFA	36MBH ~ 93.6MBH	10
	8	10	RD100VRXFA	48MBH ~ 124.8MBH	10
	10	12.5	RD125VRXFA	60MBH ~ 156.0MBH	14

2. Combinations

Classification	Capacity (Ton)	Capacity (HP)	Basic model			Total capacities of the connectable indoor units (MBH)	Maximum number of connectable indoor units
			RD075VRXFA	RD100VRXFA	RD125VRXFA		
Module unit	12	15.0	2			72MBH ~ 187.2MBH	16
	14	17.5	1	1		84MBH ~ 218.4MBH	18
	16	20.0		2		96MBH ~ 249.6MBH	20
	18	22.5		1	1	108MBH ~ 280.8MBH	24
	20	25.0			2	120MBH ~ 312.0MBH	28
	22	27.5	1	2		132MBH ~ 343.2MBH	30
	24	30.0		3		144MBH ~ 374.4MBH	32
	26	32.5		2	1	156MBH ~ 405.6MBH	34
	28	35.0		1	2	168MBH ~ 436.8MBH	36
	30	37.5			3	180MBH ~ 468.0MBH	40

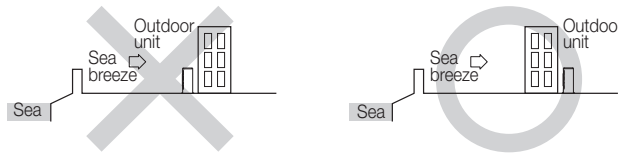
preparing the installation

SELECTING PROPER LOCATION FOR INSTALLATION

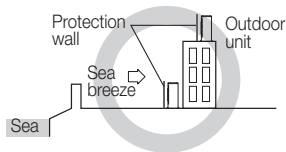
Decide the installation location based on the following condition and obtain the user's approval.

- Avoid a place that may disturb your neighbor. Noise may occur from the outdoor unit and the discharged air may run into the neighborhood. (Be careful of the operation time in a residential area)
- Install the outdoor unit on a hard and even area that can support its weight.
- Choose a flat place that rainwater does not settle or leak.
- Choose a place avoiding strong winds.
- Maintain sufficient space for repairs and service.
- Choose a place where you can easily connect the pipes and cables to the indoor unit.
- Make sure that the condensed water dripping from the drain hose runs out properly and safely.
- When installing the outdoor unit near seashore, make sure it is not directly exposed to sea breeze. If you can not find a adequate place without direct sea breeze, protection wall should be constructed.

- Install the outdoor unit in a place (such as near buildings etc.) where it can be prevented from sea breeze which can damage the outdoor unit.



- If you cannot avoid installing the outdoor unit by the seashore, construct a protection wall around to block the sea breeze.



► Protection wall should be constructed with a solid material such as concrete to block the sea breeze and the height and the width of the wall should be 1.5 times larger than the size of the outdoor unit. Also, secure over 700mm(28") between the protection wall and the outdoor unit for exhausted air to ventilate.

- Install the outdoor unit in a place where water can drain smoothly.

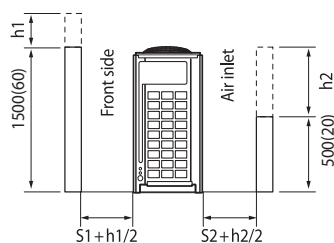
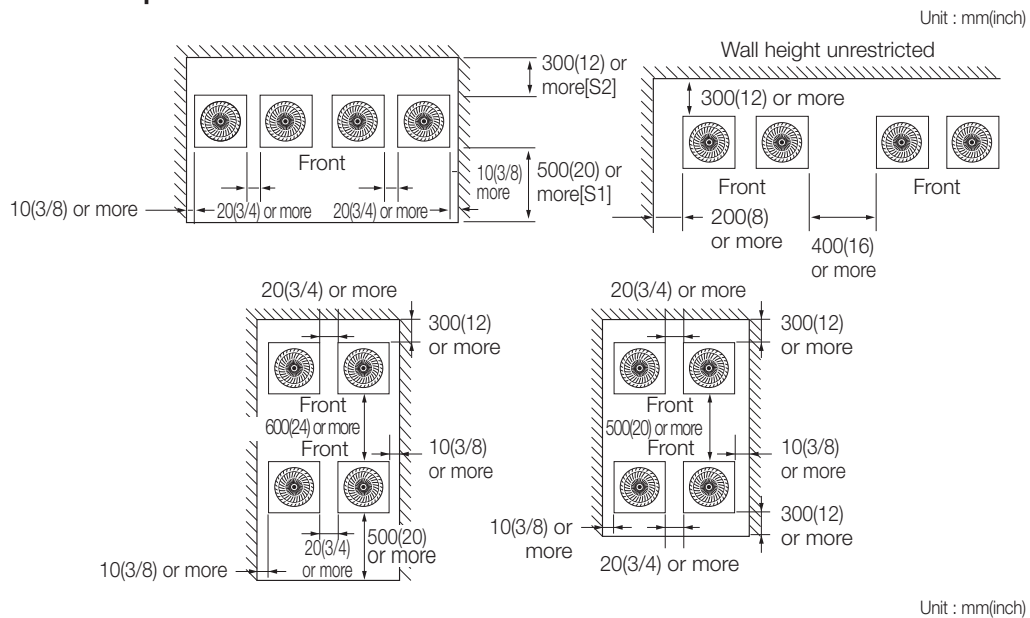
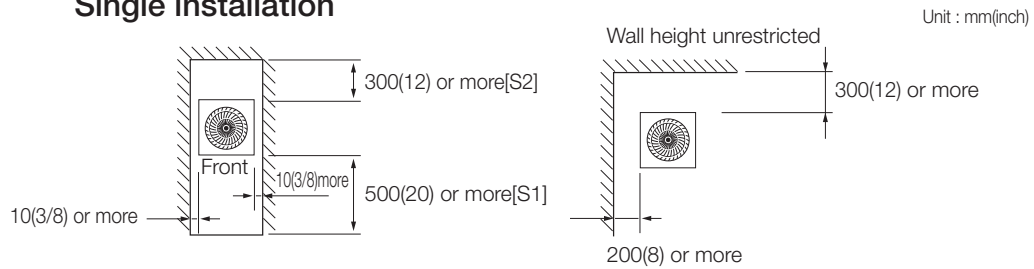
※ If you cannot find a place satisfying above conditions, please contact manufacturer.

Make sure to clean the sea water and the dust on the outdoor unit heat exchanger and spread corrosion inhibitor on heat exchanger. (At least one time per one year.)

- Choose a place where there is no direct sunlight.
- Choose a place where it could not come into contact with snow and rain.
- Choose a place where flammable gas does not leak.
- Choose a place where the indoor and outdoor unit can be connected with a pipe.



- Install the indoor unit away from any interfering sources such as radio, computer, stereo equipment and also select the place where the electrical wiring work can be possible.
 - Especially keep the unit at least 3m(118-1/8") away from the electrical equipment in an area electromagnetic waves generated and install the protection tube to protect the main power cable and communication cable.
 - Make sure that there is no equipment electromagnetic waves generate. If not, malfunction of the control system may occur due to the effect of the electromagnetic wave. (For example: The remote control sensor of the indoor unit may not be received well of electronic lighting style fluorescent lamps, such as fluorescent lamps are in the same space when using a remote control.)
- Make sure to install the outdoor unit in a safe place where snowfall will not be obstructed. The frame should be installed in a place where the air inlet and heat exchanger of the unit are not buried in the snow.
- Ventilation system will be better installed for the case of the refrigerant leakage in a closed room even if R410A is nonpoisonous and nonflammable refrigerant.
- Install the railing around the outdoor unit to prevent falling when the unit is installed at high place of roof on the building.
- Avoid installing the units in places such as an exhaust pipe and ventilating opening exposed to corrosive gas, oxides of sulfur, ammonia gas or sulfur gas herbicides. (These places need additional anticorrosive treatments. Please contact manufacture to avoid corroding copper pipes or soldered parts)
- According to the condition of power supply, electric noise or unstable voltage can occur malfunction of electric parts or control system. (At the ship or places using power supply from electric generator... etc)



Front wall height	1500(60) and less
Rear wall height	500(20) and less
Side wall height	Height unrestricted
If the height of the wall exceeds the above value, more space should be added to the front and rear space individually.	Front : $S1 + h1/2$, Rear : $S2 + h2/2$

Note

- The installation space mentioned above is minimum suggested clearance.
- To secure enough service space and performance of system, take account of more sufficient space.
- The required minimum space between outdoor units for service and performance of system is at least 100mm(4").

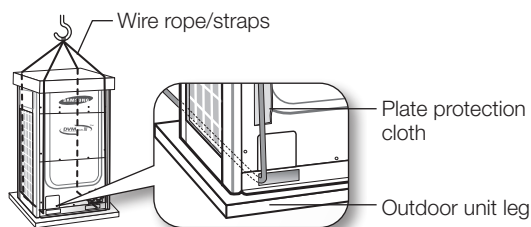
preparing the installation

MOVING THE OUTDOOR UNIT

- Select the moving route in advance.
- Secure the strength of the carrying to resist against the weight of the outdoor unit while moving.
- Do not slant the product more than 30°(86°F) when carrying it.
(Do not lay the product down sideways.)
- The surface of the heat exchanger is sharp. Be careful not to be get injury while moving and installing.

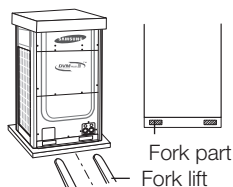
When moving with a crane or straps

- Fasten the wire rope as seen in the picture.
- To protect damage or scratches, insert a piece of cloth between the outdoor unit and the wire rope.



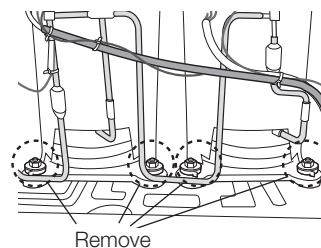
When moving with a fork lift

- Insert the fork into the bottom of the outdoor unit carefully.
- Be careful that the fork does not damage the outdoor unit.



DETACHING FASTENERS

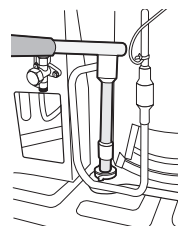
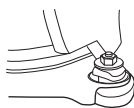
- Open the bottom cabinet with screw driver.
The compressors are fastened with nuts in 4 places of only following models.
RD125VRXF*



- Detach nut washer, washer and stopper nut from compressors with a tool.



- Refasten the nut washer only.



- Pay your attention not to touch the copper pipes as detaching the fasteners.
- The stopper nut and washer should be removed. If this work is not conducted correctly, the outdoor unit could vibrate and make noise.

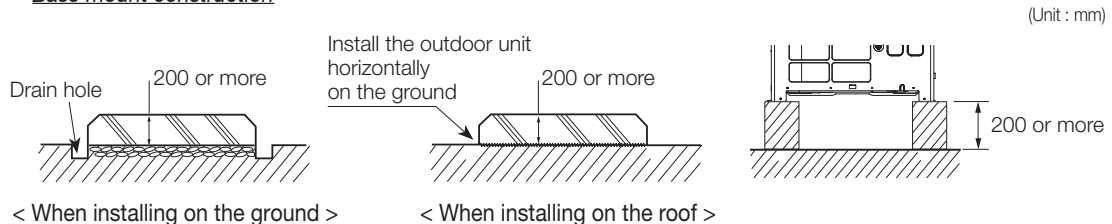
INSTALLING THE OUTDOOR UNIT

- Install the outdoor unit 200mm(8") higher than the base surface and install the drain hole to connect the pipe to the drainage.
- The concrete foundation should be 1.5 times larger than bottom of the outdoor unit.
- Condensed water may be generated in heating operation. Pay attention to waterproof and drainage of the concrete foundation where the outdoor unit is installed.
(An ice may form on the base surface in winter.)
- It is necessary to install wire mesh or steel bar when outdoor units are installed at soft foundation.
- When installing multiple outdoor units at the same place, install the H beam on the concrete foundation.
(When installing a number of outdoor unit, you can install it on the concrete foundation.)
- Install the H beam[150mm(6") x 150mm(6") x t10(3/8") : basic specification] or vibration absorption frame to jut out from the concrete foundation.
- After installing the H beam or vibration absorption frame, apply corrosion protection.
- Install a square pad[t=20mm(3/4") or more] or vibration absorption frame to prevent vibration of the outdoor unit delivering to the base surface when installing the concrete for the outdoor unit.
- Place the outdoor unit on the H beam or vibration absorption frame and fix it with the bolt, nut and washer. (The bearing force is more than 3.5kN)

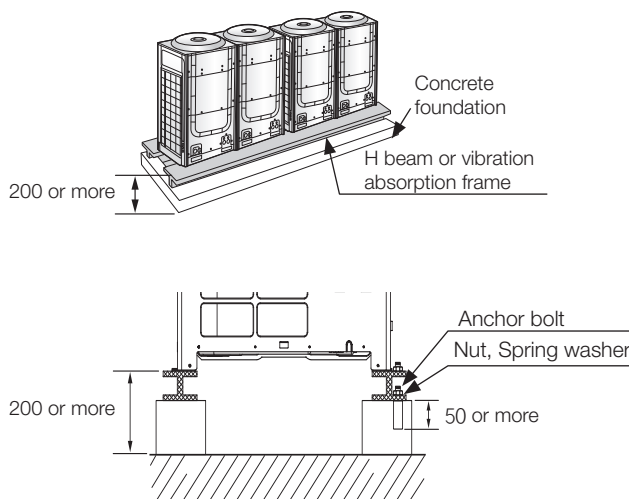


- Do not install the outdoor unit on a wood palette.
- Fix the outdoor unit securely to the base surface with anchor bolts.
- The manufacturer is not responsible for the damage occurred by not keeping standard of the installation.

Base mount construction



Outdoor unit installation

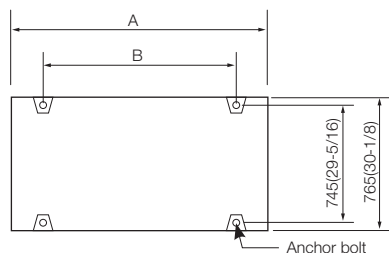


preparing the installation

INSTALLING THE OUTDOOR UNIT

Outdoor unit base mount and anchor bolt position

Unit:mm(inch)



Model	RD075VRX* RD100VRX*	RD125VRX*
A	880(34-5/8)	1200(47-1/4)
B	738(29)	1058(41-5/8)



• When tightening the anchor bolt

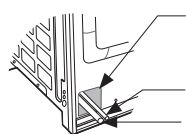
- Tighten the rubber washer to prevent the outdoor unit bolt connection part from corroding.



Rubber washer

• When connecting the pipes

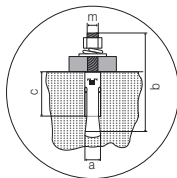
- Check the strength of the roof to install the outdoor unit and make sure to have a waterproof floor of the roof.
- Make sure that a proper drainage system has been put in place around the outdoor unit.
- To protect the internal components of the outdoor unit, secure the pipework entrance to the unit.



Close the  part.
(When the pipe is projected to the front side)

Liquid side pipe
Gas side pipe

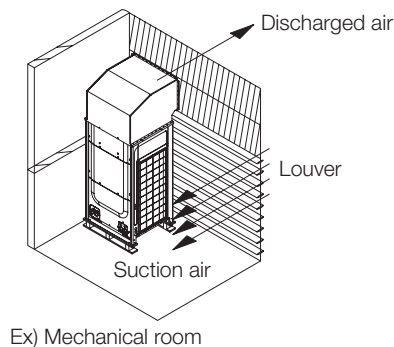
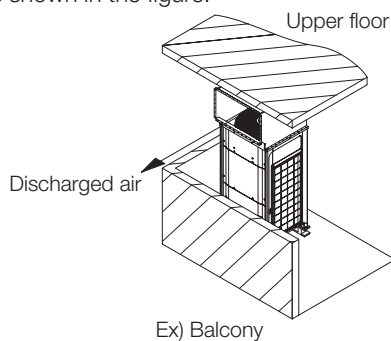
Anchor specifications



Size	Diameter of drill bit (a)	Anchor length (b)	Sleeve length (c)	Insert depth	Fastening torque
M10	14mm(1/2")	75mm(3")	40mm(1-1/2")	50mm(2")	30N·m

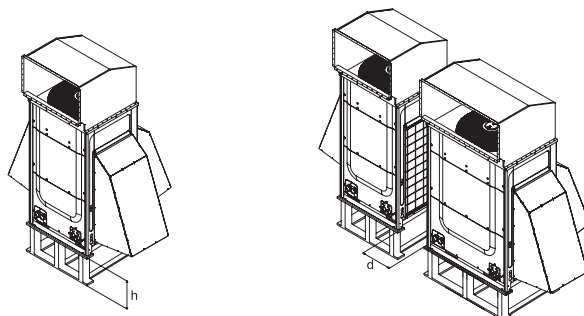
INSTALLING DUCT FOR HORIZONTAL EXHAUST DISCHARGE

- It is necessary to install an air-discharge duct(field supply) to direct exhaust from the fan horizontally if it is difficult to provide a minimum space of 2m(6'7") between the air-discharge duct outlet and a nearby obstacle as shown in the figure.



INSTALLING THE OUTDOOR UNIT IN HARSH ENVIRONMENTS

- In abnormally harsh environments such as cold and/or windy areas, sufficient countermeasures to guard against excessive wind and snow should be taken to ensure the unit's correct operation.
- Snow-proof duct(field supply) should be fitted to the unit and direct exposure to the wind should be avoided as much as possible.
- When the unit is expected to operate in cooling mode in condition under 10°C(50°F), in snowy areas, in environments subject to strong winds or rain, install air inlet and outlet ducting as shown below.



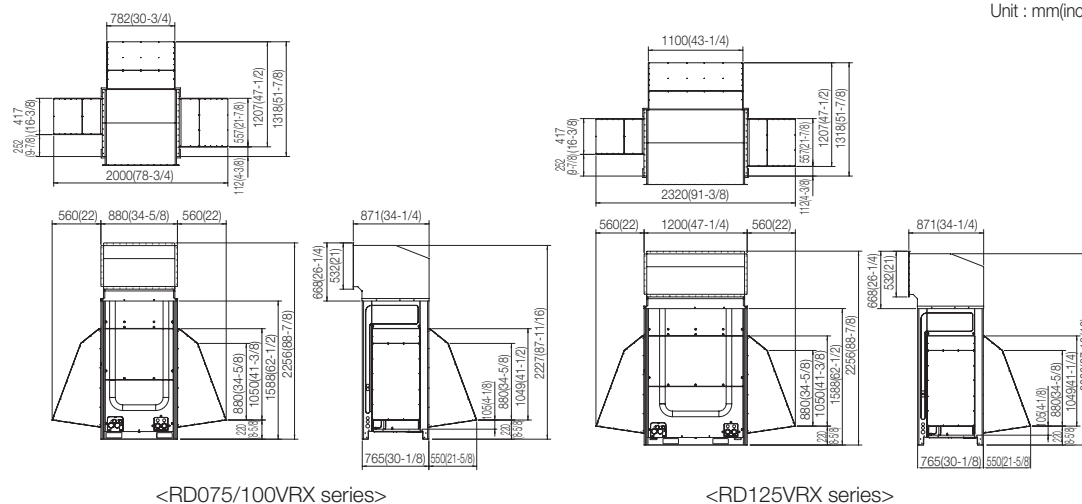
Note The following problems may occur if proper countermeasures are not taken.

- The fan in the outdoor unit may stop running, causing the unit to be damaged.
- There may be no air flow.
- The condenser pressure may drop because of strong wind, and the indoor unit may freeze.

When installing ducts

- Height of frame/foundation for snow damage prevention shall be twice as high as expected snowfall, width of frame/foundation shall not exceed that of the unit.
- The frame/foundation shall be made of angle steel, etc., and designed so that snow and wind slip through the structure. (If frame base is too wide, snow will be accumulated on it.)
- Install unit so that wind will not directly lash against openings of inlet and outlet ducts.

Unit : mm(inch)



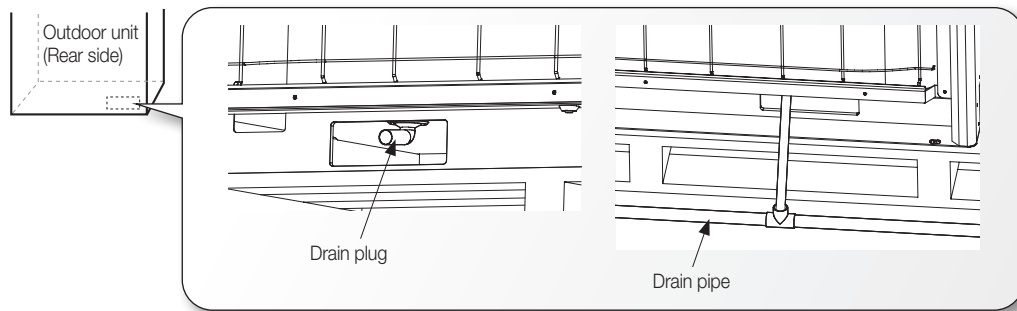
CAUTION

- The frame/foundation should be higher than expected snowfall.
- The foundation must be solid and the unit must be secured with anchor bolts.
- Be sure to install unit in a place strong enough to withstand its weight.
- When installing on a roof subject to strong wind, countermeasures must be taken to prevent the unit from being overturned.
- Be sure to install unit in a place strong enough to withstand its weight.

preparing the installation

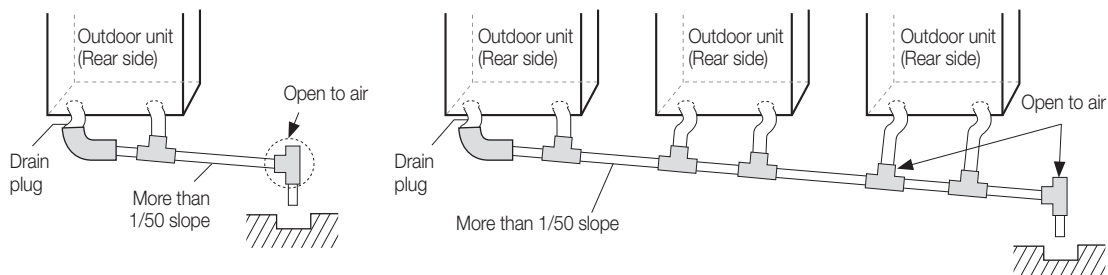
INSTALLING THE DRAIN PIPE

- Insert the provided drain plug at the 2 sides of the bottom of the unit and then connect the drain pipe.
- Install the drain pipe at the rear side of the unit to get a sufficient space for repairs and service.



When installing single outdoor unit

When installing multiple outdoor units



- Do not install a trap on the pipe.
And, install the drain pipe horizontally with a slope of 1/50 or more.
- Insulate the drain pipe and drain plug with insulation over 10t.
- Install heating device to the drain pipe to prevent it from being frozen.
Install the safety equipment for a heating appliance.

installing the unit

REFRIGERANT PIPING WORKS

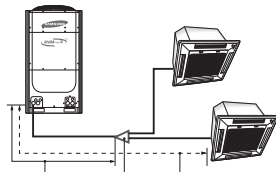


- When installing, make sure there is no leakage. When recovering the refrigerant, ground the compressor first before removing the connection pipe. If the refrigerant pipe is not properly connected and the compressor works with the service valve open, the pipe inhales the air and it makes the pressure inside of the refrigerant cycle abnormally high. It may cause explosion and injury.

- The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.
- The pressure of the R410A is high. Use only certified refrigerant pipe and follow the installation method.
- Use clean refrigerant pipe which there is no harmful ion, oxide, dust, iron content or moisture inside pipe.
- Use tools and accessories fit on R410A.

Tool	Work	If compatible with conventional tool	
Pipe cutter	Refrigerant pipe work	Pipe cutting	Compatible
Flaring tool		Pipe flaring	
Refrigerant oil		Apply refrigerant oil on flared part	Ester series oil, alkali benzene oil or synthetic oil
Torque wrench		Connect flare joint with pipe	Compatible
Pipe bender		Pipe bending	
Nitrogen gas	Air tightening test	Inhibition of oxidation	
Brazing tool		Pipe brazing	
Gauge manifold	Air tightening test ~ additional refrigerant charging	Vacuuming, charging and checking operation	Exclusive
Refrigerant charging hose			
Vacuum pump	Vacuuming unit	Use one which has a check valve and 5 torr degree of vacuum.	
Electronic scale			Compatible
Gas leak detector		Gas leak test	Exclusive
Flare joint	Use indoor unit's only		

Selecting the refrigerant pipe



Main pipe First branch joint Equivalent pipe length between outdoor unit and the farthest indoor unit

※ Main pipe : from outdoor unit to the first branch joint.

■ Select the main pipe of outdoor units with the following table.

Outdoor unit		Pipe size (O.D)						Oil balancing pipe size	
Ton	HP	Liquid		Gas		H.P. Gas		mm	inch
		mm	inch	mm	inch	mm	inch		
6	7.5	Ø9.52	Ø3/8	Ø19.05	Ø3/4	Ø15.88	Ø5/8		
8	10			Ø22.23	Ø7/8	Ø19.05	Ø3/4		
10	12.5	Ø12.70	Ø1/2			Ø22.23	Ø28.58		
12	15								
14	17.5	Ø15.88	Ø5/8	Ø28.58	Ø1 1/8				
16	20								
18	22.5					Ø28.58	Ø1 1/8	Ø6.35	Ø1/4
20	25								
22	27.5								
24	30								
26	32.5	Ø19.05	Ø3/4	Ø34.93	Ø1 3/8				
28	35								
30	37.5					Ø34.93	Ø1 3/8		

■ Select the main pipe of outdoor units with the following table when if the farthest indoor unit's length is over 90m(295').

Outdoor unit		Pipe size (O.D)						Oil balancing pipe size	
Ton	HP	Liquid		Gas		H.P. Gas		mm	inch
		mm	inch	mm	inch	mm	inch		
6	7.5	Ø12.70	Ø1/2	Ø22.23	Ø7/8	Ø19.05	Ø3/4		
8	10			Ø28.58	Ø1 1/8	Ø22.23	Ø7/8		
10	12.5	Ø15.88	Ø5/8						
12	15								
14	17.5					Ø28.58	Ø1 1/8		
16	20								
18	22.5								
20	25								
22	27.5								
24	30								
26	32.5	Ø22.23	Ø7/8						
28	35								
30	37.5			Ø41.28	Ø1 5/8				

installing the unit

REFRIGERANT PIPING WORKS

Pipe selection for DVM PLUS III HR

Outdoor unit connection pipe size : (A1), (A2), (A3)

○ (A)
■ (B)

• Example) 26Ton of compact combinations

Ton	HP	Mark	Pipe Size (O.D mm)					
			Liquid		Gas		H.P. Gas	
			mm	inch	mm	inch	mm	inch
8	10	(A1)	Ø9.52	Ø3/8	Ø22.23	Ø7/8	Ø19.05	Ø3/4
8	10	(A1)	Ø9.52	Ø3/8	Ø22.23	Ø7/8	Ø19.05	Ø3/4
10	12.5	(A1)	Ø12.70	Ø1/2	Ø28.58	Ø1 1/8	Ø22.23	Ø7/8
18	22.5	(A2)	Ø15.88	Ø5/8	Ø28.58	Ø1 1/8	Ø28.58	Ø1 1/8
26	32.5	(A3)	Ø19.05	Ø3/4	Ø34.93	Ø1 3/8	Ø28.58	Ø1 1/8

A1 : Select the pipes according to the outdoor unit capacity with following table.
A2 : Select the pipes according to sum of outdoor unit capacities behind the outdoor joint with following table.
A3 : Select the main pipe of outdoor units with the following table.

Outdoor Unit		Pipe Size (O.D)					
Ton	HP	Liquid		Gas		H.P. Gas	
		mm	inch	mm	inch	mm	inch
6	7.5			Ø19.05	Ø3/4	Ø15.88	Ø5/8
8	10	Ø9.52	Ø3/8	Ø22.23	Ø7/8	Ø19.05	Ø3/4
10	12.5	Ø12.70	Ø1/2			Ø22.23	Ø7/8
12	15			Ø28.58	Ø1 1/8		
14	17.5						
16	20	Ø15.88	Ø5/8				
18	22.5					Ø28.58	Ø1 1/8
20	25						
22	27.5						
24	30	Ø19.05	Ø3/4	Ø34.93	Ø1 3/8		
26	32.5						
28	35					Ø34.93	Ø1 3/8
30	37.5						

*A1 : Pipes to the outdoor unit (Liquid, Gas, High pressure Gas)

*A2 : Pipes between outdoor joint kits (Liquid, Gas, High pressure Gas)

*A3 : Main pipes (Liquid, Gas, High pressure Gas)

Pipe size between branch joints : (B)

Select the pipe size according to the capacity sum of indoor units which are connected below this pipe.

Total Indoor unit's capacity	Pipe Size (O.D)					
	Liquid		Gas		H.P. Gas	
	mm	inch	mm	inch	mm	inch
51MBH ↓			Ø15.88	Ø5/8	Ø15.88	Ø5/8
51~79 MBH	Ø9.52	Ø3/8	Ø19.05	Ø3/4	Ø19.05	Ø3/4
79~96 MBH			Ø22.23	Ø7/8	Ø19.05	Ø3/4
96~138MBH	Ø12.7	Ø1/2	Ø28.58	Ø1 1/8	Ø22.23	Ø7/8
138~160MBH	Ø15.88	Ø5/8			Ø28.58	Ø1 1/8
160~240MBH	Ø15.88	Ø5/8			Ø28.58	Ø1 1/8
240~336MBH	Ø19.05	Ø3/4	Ø34.93	Ø1 3/8	Ø34.93	Ø1 3/8
336MBH ↑					Ø34.93	Ø1 3/8

Pipe size between branch joints and indoor unit (C)

Select the pipe size according to the indoor unit's capacity.

Indoor unit's capacity	Pipe Size (O.D)			
	Liquid		Gas	
	mm	inch	mm	inch
6~20MBH	Ø6.35	Ø 1/4	Ø12.70	Ø 1/2
24~48MBH	Ø9.52	Ø 3/8	Ø15.88	Ø 5/8
52MBH	Ø9.52	Ø 3/8	Ø15.88	Ø 5/8
76MBH	Ø9.52	Ø 3/8	Ø19.05	Ø 3/4
96MBH	Ø9.52	Ø 3/8	Ø22.20	Ø 7/8

Branch joint : (D), (E), (F)

■ Branch joint of outdoor unit's multi connection (D)

Outdoor Multi Connection	Model	Capacity of outdoor unit
Liquid & Low Gas Pipe	MXJ-T3819*	12 ~ 30 Ton
High gas pipe	MXJ-T3100*	

■ First branch joint (E)

Select branch joint according to the outdoor unit's capacity.

Liquid & Low pressure gas Y-joint	Model	Capacity of outdoor unit
	MXJ-YA2512*	6, 8, 10 Ton
	MXJ-YA2812*	12 Ton
	MXJ-YA2815*	14, 16, 18, 20 Ton
	MXJ-YA3119*	22, 24, 26, 28 Ton
	MXJ-YA3819*	30 Ton

High pressure gas Y-joint	Model	Capacity of outdoor unit
	MXJ-YA1500	6 Ton
	MXJ-YA2500	8, 10, 12 Ton
MXJ-YA3100	14~30 Ton	

■ Branch joint (F)

Select the pipe size according to the capacity sum of indoor units which are connected below this pipe.

Liquid & Low pressure gas Y-joint	Model	Total Indoor unit's Capacity
	MXJ-YA1509*	51 MBH ↓
	MXJ-YA2512*	51~138 MBH
	MXJ-YA2812*	138~160 MBH
	MXJ-YA2815*	160~240 MBH
	MXJ-YA3119*	240~336 MBH
MXJ-YA3819*	336MBH ↑	

High pressure gas Y-joint	Model	Total Indoor unit's Capacity
	MXJ-YA1500	80 MBH ↓
	MXJ-YA2500	80~240 MBH
MXJ-YA3100	240 MBH ↑	

Additional refrigerant charging

- Additional refrigerant has to be charged according to the length and size of liquid pipe.

Liquid pipe size (O.D.)		Additional refrigerant charging	
mm	inch	kg/m	lbs/ft
Ø6.35	Ø1/4	0.020	0.0134
Ø9.52	Ø3/8	0.060	0.0403
Ø12.70	Ø1/2	0.125	0.0840
Ø15.88	Ø5/8	0.180	0.1210
Ø19.05	Ø3/4	0.270	0.1814
Ø22.23	Ø7/8	0.350	0.2352

Outdoor unit	Factory charging	
	kg	lbs
RD075VRXFA	6.5	14.330
RD100VRXFA	7.5	16.535
RD125VRXFA	9.0	19.824

Additional refrigerant charging of MCU kit	(kg/unit)	(lbs/ft)
Additional refrigerant charging of MCU is 0.5kg for every MCU kit	0.5	1.10

Additional refrigerant charging of distribution kit (kg/m)	(kg/unit)	(lbs/ft)	Remarks
Regardless of the liquid pipe size, additional refrigerant charging is 0.01kg(0.0067lbs) per meter(ft) after distribution kit	0.01	0.0067	For wall-mounted & ceiling indoor unit

■ Example of additional refrigerant charging.
Pipe length is as below.

Liquid pipe size(O.D.)		Total piping length	
mm	inch	m	ft
Ø6.35	Ø1/4	Ø6.35	Ø1/4
Ø9.52	Ø3/8	Ø9.52	Ø3/8
Ø12.70	Ø1/2	Ø12.70	Ø1/2
Ø15.88	Ø5/8	Ø15.88	Ø5/8
Ø19.05	Ø3/4	Ø19.05	Ø3/4
Ø22.23	Ø7/8	Ø22.23	Ø7/8

※ Additional refrigerant = 25x0.02+83x0.06+6x0.125+20x0.18+1x0.27+(2+18)x0.01+2x0.5=13.73 kg



- Total refrigerant amount of the system must be less than 100kg(220lbs). If total refrigerant amount of system is over 100kg(220lbs) more, the system has to be divided into smaller system, each containing less than 100kg(220lbs).

Equivalent length calculations

※ Equivalent length calculation method

Equivalent length = actual pipe length(m) + number of 'Y-joint'×0.5(m)+number of 'Header joint'×1.0(m)+ number of elbows×equivalent length of each elbow

Elbow			
Pipe size(O.D.)		Equivalent length	
mm	inch	m	ft
Ø9.52	Ø3/8	0.18	0.59
Ø12.70	Ø1/2	0.20	0.66
Ø15.88	Ø5/8	0.25	0.82
Ø19.05	Ø3/4	0.35	1.15
Ø22.23	Ø7/8	0.40	1.31
Ø25.40	Ø1	0.45	1.48
Ø28.58	Ø1-1/8	0.50	1.64
Ø31.75	Ø1-1/4	0.55	1.80
Ø34.93	Ø1-3/8	0.58	1.90
Ø38.10	Ø1-1/2	0.60	1.97
Ø41.30	Ø1-5/8	0.70	2.30
Ø44.45	Ø1-3/4	0.75	2.46
Ø50.80	Ø2	0.80	2.62

Type	Equivalent length	
	m	ft
Y joint	0.5	1.64
Header joint	1.0	3.28

installing the unit

REFRIGERANT PIPING WORKS

Keeping refrigerant pipe clean and dry

To prevent foreign materials or water from entering the pipe, it is important to keep the refrigerant pipe clean and dry and to seal it during installation.

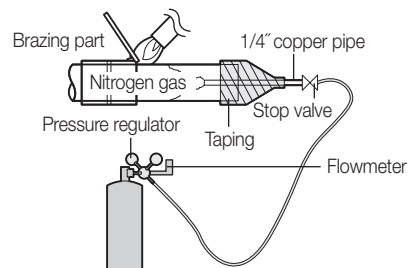
Exposure place	Exposure time	Sealing type
Outside exposure	Longer than one month	Pipe pinch
	Shorter than one month	Taping
Inside exposure	-	Taping

Brazing the pipe

- Make sure that there is no moisture inside the pipe.
- Make sure that there are no foreign materials and impurities in the pipe.
- Make sure that there is no leak.
- Make sure to follow the instruction when brazing the pipe.

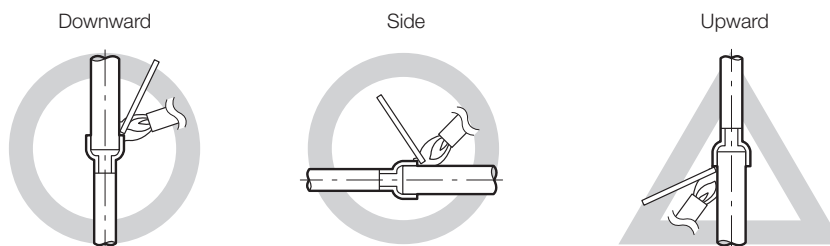
The use of Nitrogen gas

1. Use Nitrogen gas when brazing the pipes as shown in the picture.
2. If you do not use Nitrogen gas when brazing the pipes, oxide may form inside the pipe. It can cause the damage of the compressor, valves.
3. Adjust the flow rate of the Nitrogen gas with a pressure regulator to maintain 0.05m³/h(1.77ft³/h) or less.



Direction of the pipe when brazing

- Performing the brazing of the pipe should be headed downward or horizontally.

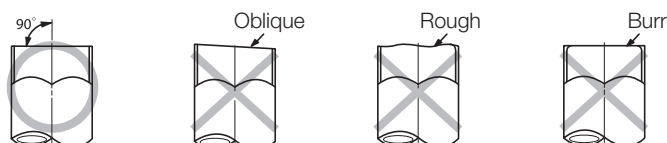


Note Avoid brazing the pipe upward.

Cutting or Flaring the pipes

To prevent foreign materials or water from entering the pipe, it is important to keep the refrigerant pipe clean and dry and to seal it while installing.

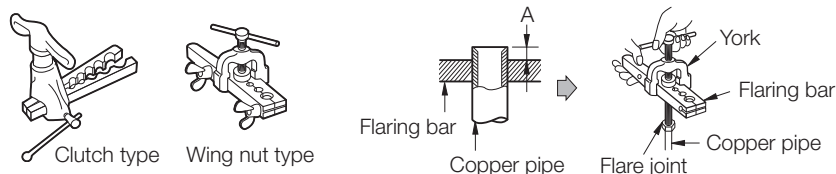
1. Make sure that you prepared the required tools.
(pipe cutter, reamer, flaring tool and pipe holder)
2. If you want to shorten the pipe, cut it using a pipe cutter ensuring that the cut edge remains at 90° with the side of the pipe. There are some examples of correctly and incorrectly cut edges below.

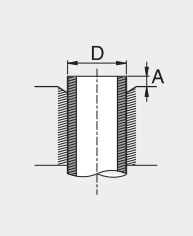


3. To prevent a gas leak, remove all burrs at the cut edge of the pipe using a reamer.

4. Carry out flaring work using flaring tool as shown below.

Flaring tool



	Outer diameter [mm(inch)]	A[mm(inch)]		
		Flare tool for R410A clutch type	Conventional flare tool	
			Clutch type	Wing nut type
	ø6.35(ø1/4)	0~0.5(0~0.776)	1.0~1.5(0.039~0.059)	1.5~2.0(0.059~0.079)
	ø9.52(ø3/8)	0~0.5(0~0.776)	1.0~1.5(0.039~0.059)	1.5~2.0(0.059~0.079)
	ø12.70(ø1/2)	0~0.5(0~0.776)	1.0~1.5(0.039~0.059)	1.5~2.0(0.059~0.079)
	ø15.88(ø5/8)	0~0.5(0~0.776)	1.0~1.5(0.039~0.059)	1.5~2.0(0.059~0.079)

5. Check if you flared the pipe correctly. There are some examples of incorrectly flared pipes below.

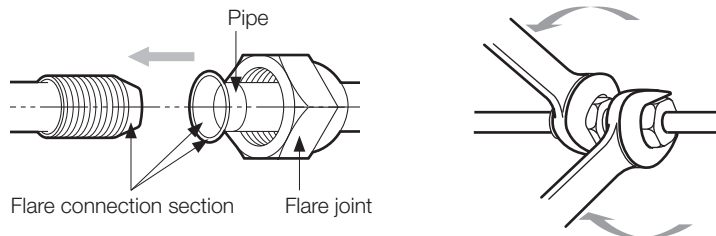


installing the unit

REFRIGERANT PIPING WORKS

Aligning the pipes

- Check that the flaring is properly made.
- Align the center of the piping and sufficiently tighten the flare nut with fingers. Finally, tighten the flare nut with torque wrench until the wrench clicks. When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.
- Make sure to use ester oil to coat the flare connection section.



Outer diameter [mm(inch)]	Connection torque (kgf•cm)	Flare dimension [mm(inches)]	Flare shape [mm(inches)]
ø6.35(ø1/4)	145~175	8.70~9.10(0.343~0.358)	
ø9.52(ø3/8)	333~407	12.80~13.20(0.504~0.520)	
ø12.70(ø1/2)	505~615	16.20~16.60(0.638~0.654)	
ø15.88(ø5/8)	630~769	19.30~19.70(0.760~0.776)	



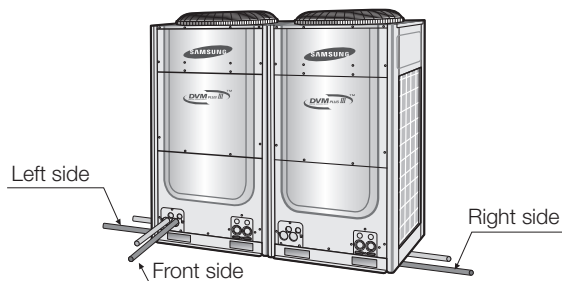
CAUTION

Caution for connecting the pipe

- Blowing Nitrogen gas should be done when brazing the pipe.
- Make sure to use the provided flare joint.
- Make sure that there are any cracks on the bent pipe.
- Do not fasten the flare joint with excessive strength.
- Use ester oil to coat the flare connection section to prevent refrigerant leak.
R410A is a high pressure refrigerant therefore there is a risk of refrigerant leakage if the flare connection is not coated by ester oil.

Free piping & wiring directions

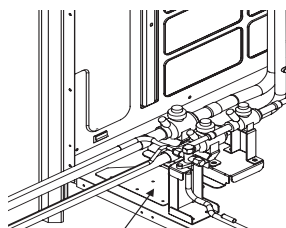
DVM PLUS III HR is easy to install as its piping can be connected from front, right, left and bottom side. Wiring hole (Conduits) adds convenience as it allows power and communication lines to be connected in various ways and directions.



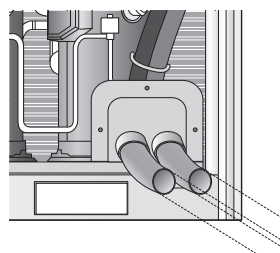
CAUTION

Caution for using knock-out hole

- Make sure not to damage the exterior of the outdoor unit.
- Remove all burrs at the edge of the knock-out hole and apply the paints it to prevent rust.
- Use a cable tube and bushing to prevent a cable from being damaged when passing through a knock-out hole.



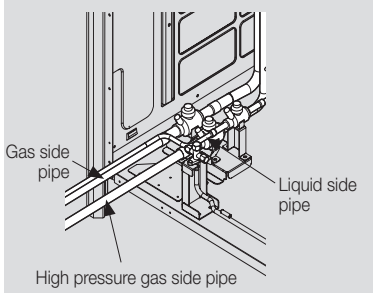
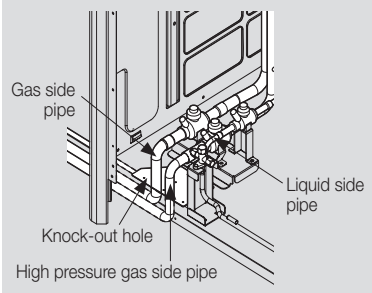
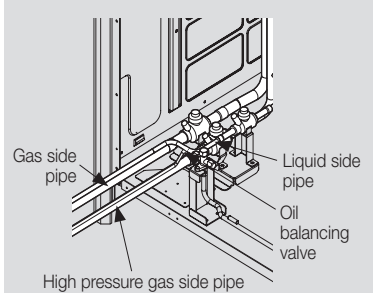
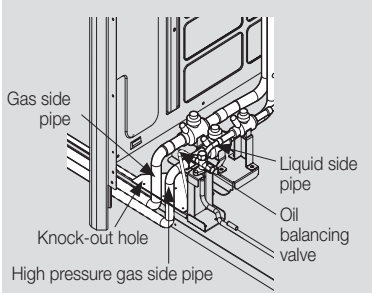
Knock-out hole



installing the unit

REFRIGERANT PIPING WORKS

Connecting the outdoor unit pipe

Heat Pump	Connection from front side	Connection from bottom at the left/right side
Working process	- First, remove the cover from unit. - Separate the knock-out hole to use. If the hole is open, small animals such as squirrels and rats may get into the unit through the hole and the unit may be damaged. - Fix the pipe cover of bottom side and fix the pipe cover of upper side thereafter.	- Separate the knock-out hole at the bottom side of the unit and install the pipe. - After installing and insulating the pipe, close up the remaining gap. If the gap is remain open, small animals such as rats and squirrels may get inside the unit and cause damage to the unit.
Single installation		
Combination installation		



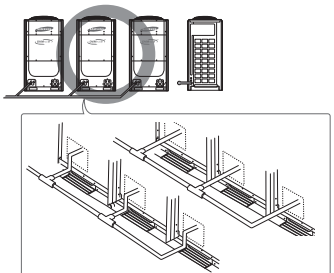
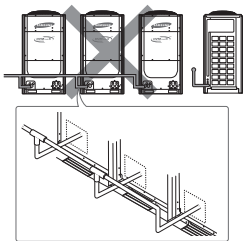
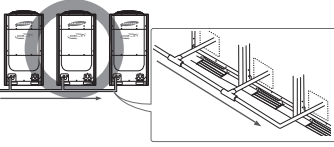
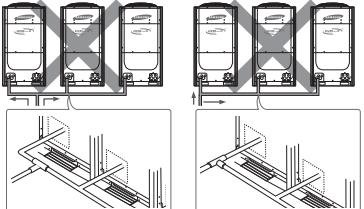
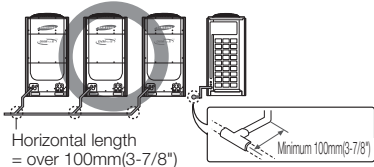
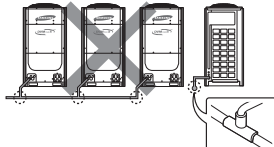
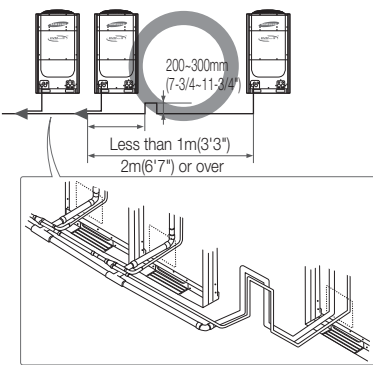
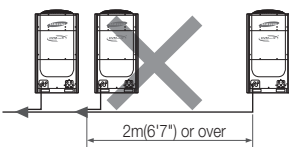
CAUTION

Caution for connecting the pipe

- When connecting the pipe to the unit, the unit may get damaged by a welding fire and a flame. Use a flame proofing cloth to protect the unit from a welding fire or flame. Ambient air temperature sensor for detecting outside temperature is located on the left side of the welding part. Make sure not to damage the temperature sensor when welding it.
- The O-ring and Teflon packing inside service valve may get damaged by a welding fire. Wrap the bottom side of the service valve with a wet cloth and weld it as shown above. Make sure not to interrupt the welding with the drops of the wet cloth.
- The connecting pipes of liquid side and gas side should not contact each other. Vibration may cause a damage to the pipes.

Piping works among outdoor units

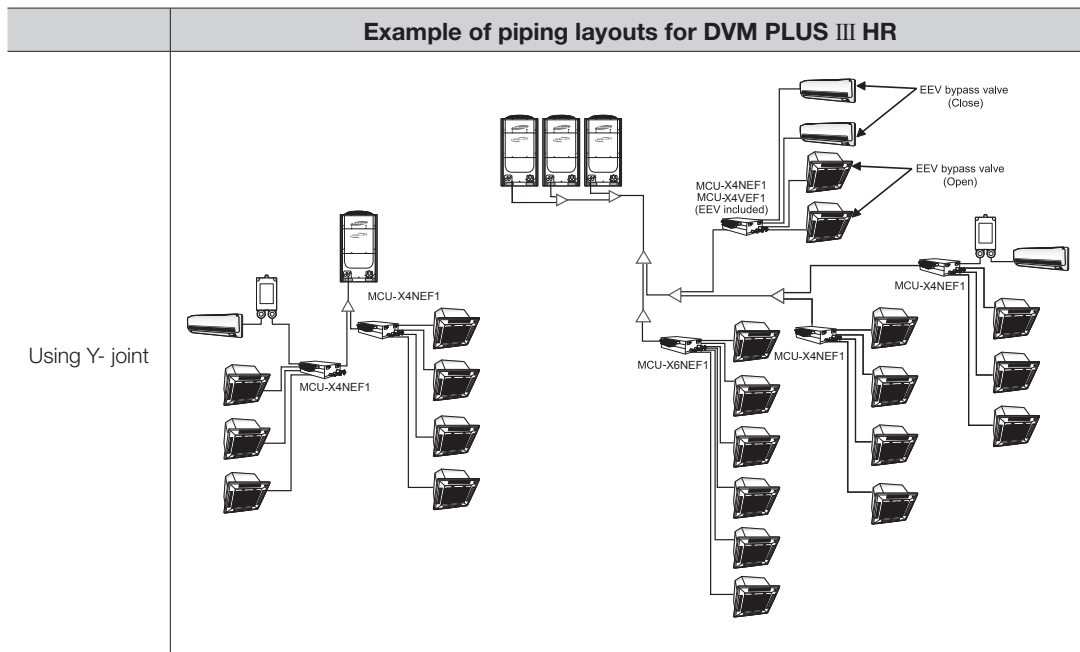
- The additional branch joints are needed for module installation of the outdoor units.
- When outdoor units are installed in module, there is no designation of outdoor unit's location according to capacity.
- The connected piping should be positioned at the same level with pipe cover hole or lower.

Cautions	Correct piping work	Wrong piping work
The refrigerant piping should be the same level or lower than connecting position of piping to outdoor units.		
Piping work should be run with side direction for better uniform distribution of refrigerant and oil like next diagram.		
Outdoor joint kits should be installed in a horizontal direction, even it is a low pressure pipe.		
When the piping length between outdoor and branch joints is 2m(6'7") or more, a vertical trap has to be installed like right diagram.		

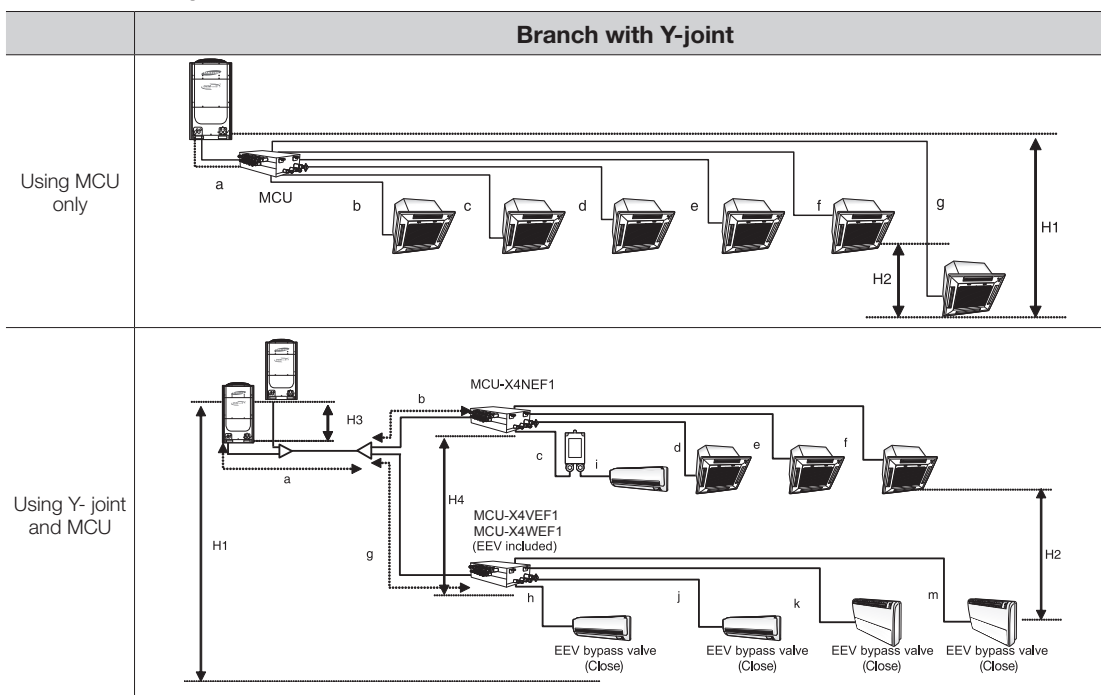
installing the unit

REFRIGERANT PIPING WORKS

The examples of the refrigerant pipe installation



► Heat Recovery model



Items				Examples		Remarks
Max. piping length	Outdoor ~ Outdoor unit	Piping (Equivalent piping)	200m(656') 220m(722')	Using MCU only	$a+b+c+d+e+f+g \leq 200\text{m}(220\text{m})/256'(722')$	Equivalent pipe length. Y joint : 0.5m, Header : 1m, MCU : 1m
				Using Y-joint and MCU	$a+g+m \leq 200\text{m}(220\text{m})/656'(722')$	
		Total piping	1000m(3281')	Using MCU only	$a+b+c+d+e+f+g \leq 1000\text{m}/3281'$	
				Using Y-joint and MCU	$a+b+c+d+e+f+g+p+h+i+j+k+m \leq 1000\text{m}/3281'$	
		Piping	10m(33')	$r \leq 10(33'), s \leq 10(33'), t \leq 10\text{m}(33')$		
		Equivalent piping	13m(43')	$r \leq 13(43'), s \leq 13(43'), t \leq 13\text{m}(43')$		
Level difference	Outdoor ~ Indoor unit	Piping	50m / 40m ^(*) (164'/131')	H1 $\leq$ 50/40m(164'/131')		
	Indoor ~ Indoor unit	Piping	15m(49')	H2 $\leq$ 15m(49')		
	Outdoor ~ Outdoor unit	Piping	5m(16')	H3 $\leq$ 5m(16')		
	MCU~MCU	Piping	15m(49')	H4 $\leq$ 15m(49')		
Allowable length after branch	The first branch ~ the farthest Indoor unit	Piping	45m(148')	Using MCU only	45m(148')	
				Using Y-joint and MCU	$g+m \leq 45\text{m}(148')$	
	MCU(Included EEV)	Piping	20m(66')	$m \leq 20\text{m}(66')$		

*1) As an outdoor unit is located in a lower position than indoor unit, level difference is 40m.

installing the unit

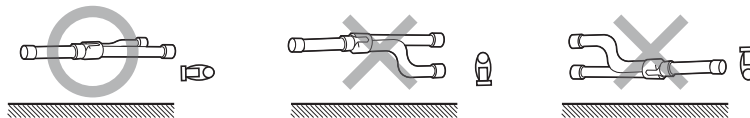
REFRIGERANT PIPING WORKS

Installing the branch joints

► Y-joint

- Install the Y-joint 'horizontally' or 'vertically'.

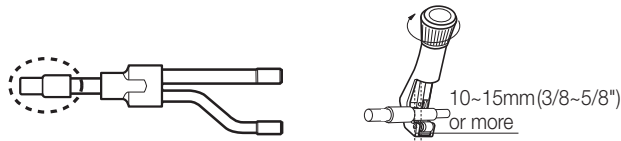
► Install horizontally



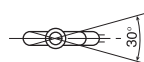
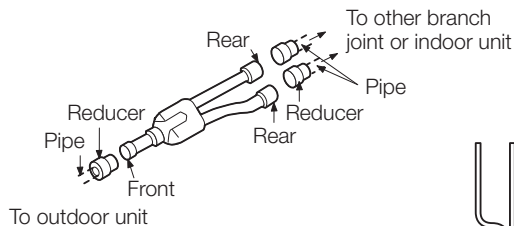
► Install vertically



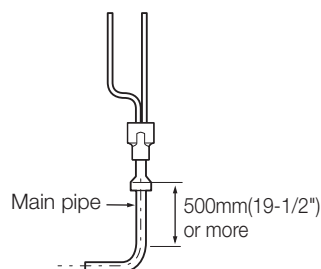
- Note**
- When using A~J type of Y-joint, connect the Y-joint to the pipe with provided reducer.
 - When using K~Z type of Y-joint, connect the Y-joint to the pipe by cutting the inlet of the Y-joint or provided reducer properly.



Keep a minimum distance of 500mm(19-1/2") or more before connecting a branch joint.



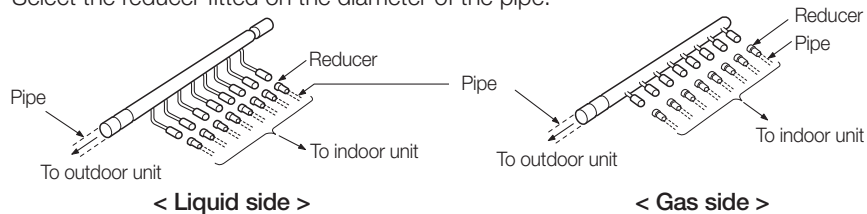
* Install the Y-joint within $\pm 15^\circ$ on the horizontal or on the vertical.



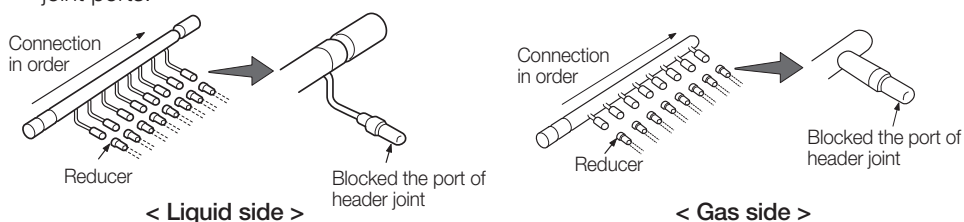
Installing the branch joints

► Header joint

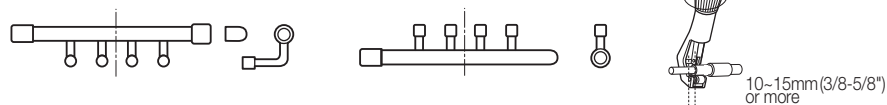
1. Select the reducer fitted on the diameter of the pipe.



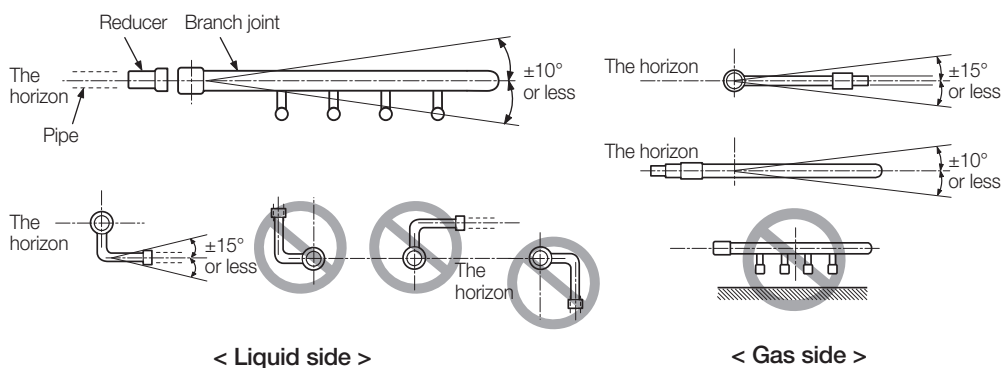
2. Braze the pipes ends with caps if the number of connected indoor unit is fewer than header joint ports.



- When using A~J type of header joint, connect the header joint to the pipe with provided reducer.
- When using K~Z type of header joint, connect the header joint to the pipe by cutting the provided reducer properly.
- Connect the header joint in order respecting the number of the indoor unit.
- Connect the indoor unit as the highest capacity comes first.



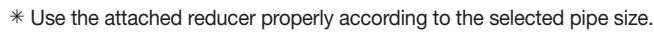
3. Install the header joint horizontally.
 - Install the header joint horizontally so that it is not facing down.



Note Incorrect installation of Y-joint and header joint cause poor oil and refrigerant distribution between indoor units.
It may decrease the system's performance or cause compressor failure.

REFRIGERANT PIPING WORKS

* Installation of outdoor joint

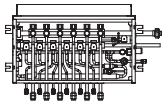
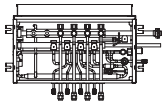
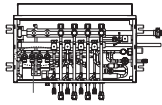
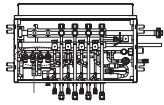


- When using A~J type of Outdoor joint, connect the Outdoor joint to the pipe with provided reducer.
- When using K~Z type of Outdoor joint, connect the Outdoor joint to the pipe by cutting provided reducer properly.



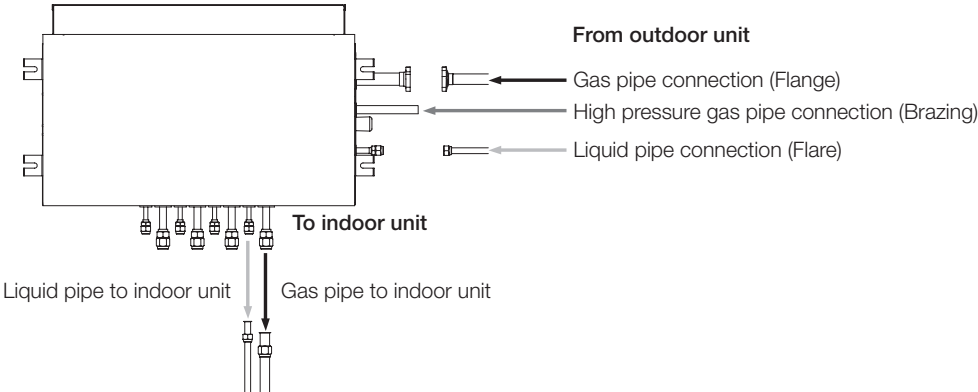
<Oil balancing pipe>

Installing MCU

Model	MCU-X6NEF1	MCU-X4NEF1	MCU-X4VEF1	MCU-X4WEF1
The exterior of MCU				
Quantity of the connectable indoor units	Up to 6 units	Up to 4 units	Up to 4 units	Up to 4 units
The maximum capacity of the connectable indoor units	152MBH ↓	152MBH ↓	152MBH ↓	152MBH ↓
Built-in EEV	Not included	Not included	Included	Included
	Cannot connect the indoor unit that EEV is not included in.	Cannot connect the indoor unit that EEV is not included in.	Can connect the indoor unit that EEV is not included in.(Below 12MBH)	Can connect the indoor unit that EEV is not included in.(Over 18MBH)

- Note**
- MCU-X4VEF1/MCU-X4WEF1 is supplied with EEV bypass valve located on the front side of MCU being opened for indoor unit with EEV.
 - To connect the indoor units not having EEV, close EEV bypass valve.

Connecting the pipe



- Use the provided installation pattern when installing the MCU.
- Use a welding curtain to prevent the unit to get damaged from a welding fire or flame when the welding for a high pressure gas pipe is made.
- Connect the flange of the low pressure gas pipe to a pipe and then install the flange to MCU. When installing the MCU, insert the provided O-ring into a gap.
- Wrap the high pressure gas pipe with wet cloth when brazing it.

installing the unit

WIRING WORK



- Install a circuit breaker. For safety and maintenance, we strongly recommend that MCCB, ELB and ELCB have to be installed every outdoor unit.
 - ELCB : Earth Leakage Circuit Breaker
 - MCCB : Molded Case Circuit Breaker
 - ELB : Earth Leakage fuse Breaker
- Operate the unit after the refrigerant piping work must be done.
- Do not disassemble or alter the wiring of the unit during the electrical wiring work. If not, the unit may be damaged.

Manufacturer's recommended specifications of the circuit breaker and power cable

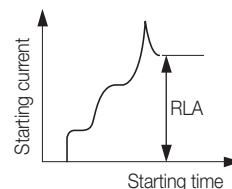
1. Basic model

Capacity(HP)	Model	MCCB(A)	ELB
7.5	RD075VRXFA	50	50A, 30mA, ≤100ms
10	RD100VRXFA		
12.5	RD125VRXFA	60	60A, 30mA, ≤100ms

2. Electric Specification

Model	Units				Power supply	Comp.	OFM	
	Hz	Volts	Min.	Max.	MCA	RLA	kW	FLA
RD075VRXFA	60	208-230	187	253	48.1	13.8+21.8	0.63	7
RD100VRXFA	60	208-230	187	253	53.8	19.6+21.8	0.63	7
RD125VRXFA	60	208-230	187	253	61.1	23.4+24.6	0.63	7

- The relationship between the starting time and the starting current (Digital Scroll Comp. + Fixed Scroll Comp)



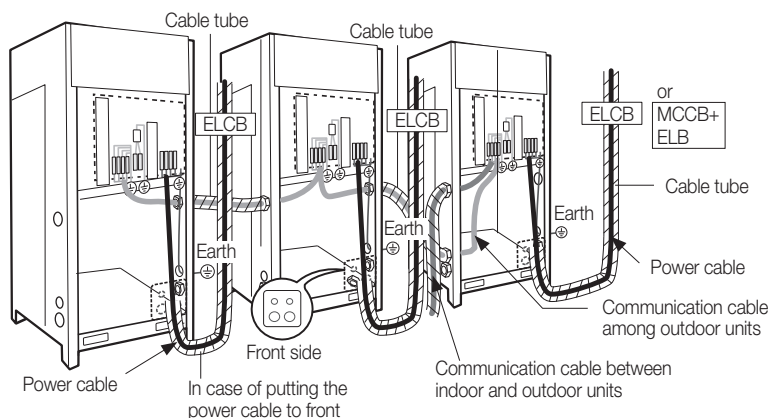
- Voltage range
Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
- Maximum allowable voltage variation between phases is 2%(4.6V).

* Abbreviations

- MCA: Min. Circuit Amps. (A)
MCA = 1.25 X LOAD1 + LOAD2
(LOAD1: RLA of Fixed Comp. / LOAD2: RLA of Digital Comp. + FLA of Fan Motor)
- RLA: Rated Load Amps. (A)
- OFM: Outdoor Fan Motor
- FLA: Full Load Amps. (A)
- kW : Rated Motor Output (kW)

Power supply and communication cable configuration

- All wiring, components and materials to be procured on the site must comply with the applicable local and national codes.
- Install the main power cable and grounding cable through the knock-out hole that is in the middle (or in the bottom) of the side of the unit and at the bottom of the front of the unit.
- Install the power and communication cable using the cable tube separately.
- Fix a cable tube using a CD connector(Wire conduit) and bushing at the knock-out hole of the outdoor unit.
- Be sure to install the switch and the fuse to the power line of each equipment.



Specifications of the cable tube

Name	Material	Description
CD tube	PVC	- When the unit is installed indoors - When the unit is not exposed outdoors because of concrete construction
power cable tube	Galvanized steel sheet	- When the unit is installed indoors - When the unit is exposed outdoors and then the protection for a power cable is needed
vinyl tube for a power cable	Galvanized steel sheet + Soft PVC compound	- When the unit is installed indoors - When the unit is exposed outdoors and then the protection for a power cable or waterproof function is needed



You must use the cables suits local standard.

- Using cables that are not suitable for local standard may lead to accident in the future that may lead to property damage.



Caution for knock-out punching

- Make a knock-out hole by driving in a nail.
- After making a knock-out hole, apply rust resisting paint around the hole.
- Remove all burrs at the edge of the knock-out hole and secure the cable to the outdoor knock-out using lining and bushing with an electrical insulation such as rubber and so on.



Connect the power cable using the compressed ring terminal.

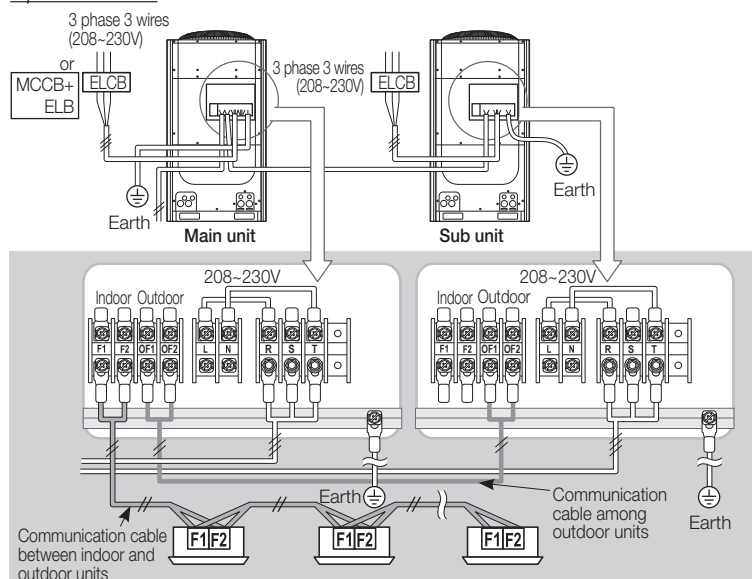
installing the unit

WIRING WORK

Power wiring diagram

► External connection diagram of DVM PLUS III HR

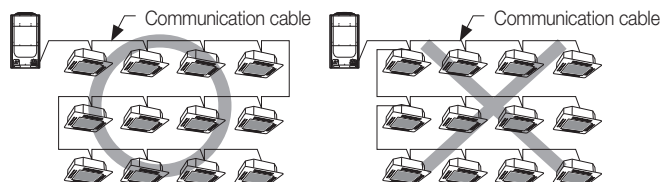
3 phase 3 wires



- Connect the power cable of the outdoor unit after checking that R-S-T(3 phase 3 wires) is properly connected.
- The communication cable between indoor and outdoor units has no polarity.
- Arrange the cables using cable ties.
- You must install ELCB or ELB since electric shock or fire may occur if you do not install them.

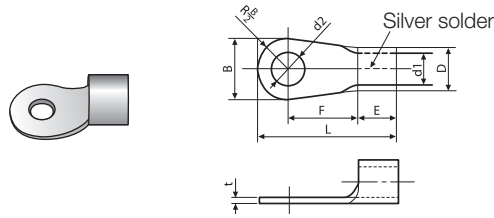


- Indoor power supply must be separated from outdoor power supply.
- Connect the communication cable among the outdoor units when combining the outdoor units.
- Connect the communication cable between indoor and outdoor units to the main outdoor unit.
- If the communication cable between indoor and outdoor units and the communication cable among outdoor units are crossed, communication is not available.
- The length of the cable among the outdoor units should be under 30m(98'5") or less.
- Do not multiplex the communication cable to prevent communication error.
- Maximum wiring length between the outdoor unit and the farthest indoor unit is 1000m(3280'10").



Selecting solderless ring terminal

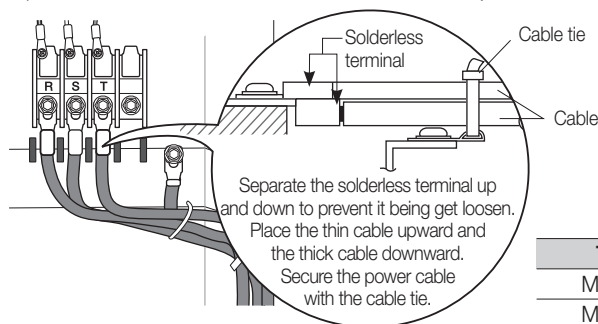
- Select a solderless ring terminal of a connecting power cable based on a nominal dimensions for cable.
- Cover a solderless ring terminal and a connector part of the power cable and then connect it.



Nominal dimensions for cable [mm][inch]	Nominal dimensions for screw [mm][inch]	B		D		d1		E	F	L	d2		t
		Standard dimension [mm][inch]	Allowance [mm][inch]	Standard dimension [mm][inch]	Allowance [mm][inch]	Standard dimension [mm][inch]	Allowance [mm][inch]	Min. [mm] [inch]	Min. [mm] [inch]	Max. [mm] [inch]	Standard dimension [mm][inch]	Allowance [mm][inch]	Min. [mm] [inch]
4/6 (0.006/ 0.009)	4(3/8)	9.5(3/8)	± 0.2 (± 0.007)	5.6(1/4)	$+0.3(+0.011)$ $-0.2(-0.007)$	3.4(1/8)	± 0.2 (± 0.007)	6 (1/4)	5 (3/16)	20 (3/4)	4.3 (3/16)	$+0.2(+0.007)$ 0(0)	0.9 (0.03)
	8(3/16)	15(9/16)							9 (3/8)	28.5 (1-1/8)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	
10(0.01)	8(3/16)	15(9/16)	± 0.2 (± 0.007)	7.1(1/4)	$+0.3(+0.011)$ $-0.2(-0.007)$	4.5(3/16)	± 0.2 (± 0.007)	7.9 (5/16)	9 (3/8)	30 (1-3/16)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	1.15 (0.04)
16(0.02)	8(3/16)	16(10/16)	± 0.2 (± 0.007)	9(3/8)	$+0.3(+0.011)$ $-0.2(-0.007)$	5.8(1/4)	± 0.2 (± 0.007)	9.5 (5/16)	13 (1/2)	33 (1-5/16)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	1.45 (0.05)
25(0.03)	8(3/16)	12(1/2)	± 0.3 (± 0.011)	11.5(7/16)	$+0.5(+0.019)$ $-0.2(-0.007)$	7.7(5/16)	± 0.2 (± 0.007)	11 (3/8)	15 (5/8)	34 (1-3/8)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	1.7 (0.06)
	8(3/16)	16.5(10/16)							13 (1/2)	43 (1-11/16)	8.4 (1-3/16)		
35(0.05)	8(3/16)	16(10/16)	± 0.3 (± 0.011)	13.3(1/2)	$+0.5(+0.019)$ $-0.2(-0.007)$	9.4(3/8)	± 0.2 (± 0.007)	12.5 (1/2)	13 (1/2)	38 (1-1/2)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	1.8 (0.07)
	8(3/16)	22(7/8)							13 (1/2)	43 (1-11/16)	8.4 (1-3/16)		
50(0.07)	8(3/16)	22(7/8)	± 0.3 (± 0.011)	13.5(1/2)	$+0.5(+0.019)$ $-0.2(-0.007)$	11.4(7/16)	± 0.3 (± 0.011)	17.5 (11/16)	14 (9/16)	50 (2)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	1.8 (0.07)
70(0.10)	8(3/16)	24(1)	± 0.4 (± 0.015)	17.5(11/16)	$+0.5(+0.019)$ $-0.4(-0.015)$	13.3(1/2)	± 0.4 (± 0.015)	18.5 (3/4)	20 (3/4)	51 (2)	8.4 (1-3/16)	$+0.4(+0.015)$ 0(0)	2.0 (0.078)

Connecting the power terminal

- Connect the cables to the terminal board using the solderless ring terminal.
 - Connect the certified and rated cables only.
 - Connect using a driver which is able to apply the rated torque to the screws.
 - If the terminal is loose, fire may occur caused by arc.
 - If the terminal is connected too firmly, the terminal may be damaged.
 - External force should not be applied to the terminal block and wires.
 - The cable ties to fasten the wire should be an incombustible material, V0 or above.
- (The cable ties should be used to fasten the power wire and they are supplied with the unit.)



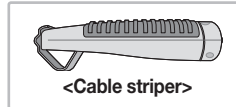
Tightening Torque [kgf·cm(lbf·ft)]	
M4	12.0~14.7(0.86~1.06)
M8	56.1~74.4(4.05~5.38)

installing the unit

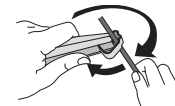
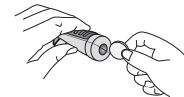
WIRING WORK

Connecting the power terminal

Examples to use cable stripper



1. Adjust the blade position by coin(the controller is at the bottom side of the tool). Fix the blade position according to the outer sheath thickness of the power cable.
2. Fix the power cable and tool by using the hook at the top side of the tool.
3. Cut out the outer sheath of the power cable by revolving the tool in the direction of the arrow, two or three times.
4. At this situation, cut out the outer sheath of the power cable by moving the tool toward the arrow direction expressed.
5. Slightly bend the wire and pull out the cut part of the outer sheath.

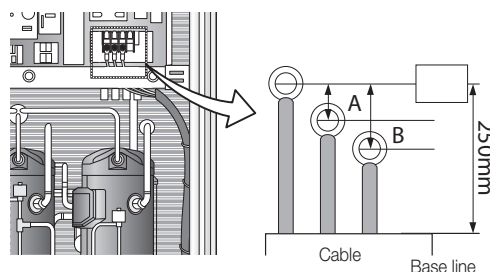


Power cable arrangement



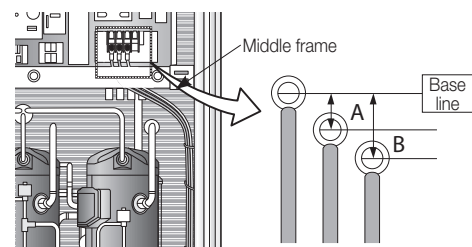
- Make sure all wiring should not contact with piping line during the field wiring work. If not, the vibration of compressor can make a damage to wiring and piping.
- Make sure to pass electrical wiring of the power cable(3 phase 3 wires) through a conduit hole of the front side.

Connecting the Ring terminal of 3 Phase cable(CV)



A	B
30mm(1-1/8")	60mm(2-3/8")

Connecting the Ring terminal of 3 Phase cable(FCV)



A	B
30mm(1-1/8")	60mm(2-3/8")

1. Be sure to connect the suitable length of power wiring to the power wiring terminal block using ring terminal above the figures.
2. Make sure to fix wiring using cable tie like above the figures.
3. After wiring, reinstall the housing cover which has an isolator into the middle frame.

Grounding work

- Grounding must be done by a qualified installer for your safety.

► Grounding the power cable

- The standard of grounding may vary according to the rated voltage and installation place of the air conditioner.
- Ground the power cable according to the following.

Power condition \ Installation place	High humidity	Average humidity	Low humidity
Electrical potential of lower than 150V		Perform the grounding work 3. ^{Note 1)}	Perform the grounding work 2 if possible for your safety. ^{Note 2)}
Electrical potential of higher than 150V		Must perform the grounding work 3. ^{Note 1)} (In case of installing circuit breaker)	

Note 1) Grounding work 3

- ◆ Grounding must be done by your installation specialist.
- ◆ Check if the grounding resistance is lower than 100Ω.
When installing a circuit breaker that can cut the electric circuit in case of a short circuit, the allowable grounding resistance can be 30~500Ω.

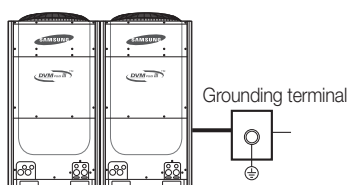
Note 2) Grounding at dry place

- ◆ The grounding resistance is should be lower than 100Ω.
(It should not be higher than 250Ω)

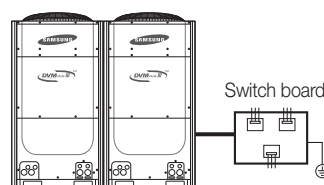
► Performing the grounding work

- Use the grounding wire by referring to the specification of the electric cable for the outdoor unit.

* When using the terminal for grounding only



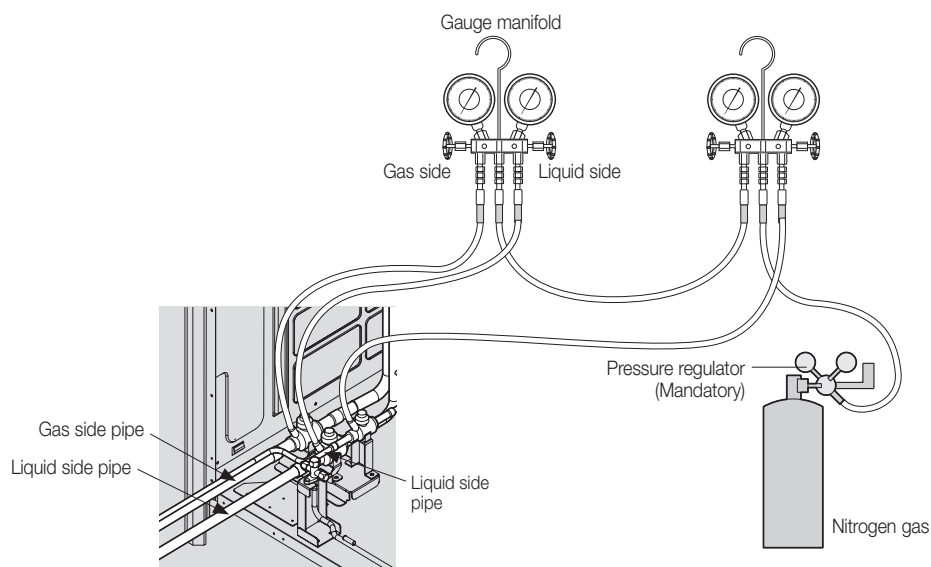
* When using grounding of the switch board



installing the unit

PERFORMING THE REFRIGERANT GAS LEAK TEST

- Use tools for R410A to prevent the inflow of foreign substances and resist against the internal pressure.
- Do not remove the core of filling port.
- Use dry Nitrogen gas as doing an airtight test like below.



Apply pressure to the liquid side pipe, gas side pipe and oil balancing pipe(only for module) with Nitrogen gas of 4.1MPa(594.6Psi).

If you apply pressure more than 4.1MPa(594.6Psi), the pipes may be damaged.
Apply pressure using pressure regulator.

Keep it for minimum 24 hours to check if the pressure drops.

After applying Nitrogen gas, check the change of pressure using pressure regulator.

If the pressure drops, check if there is gas leak.

If the pressure is changed, apply soapy water to check the leak. Check the pressure of the gas again.

Maintain 1.0MPa(145Psi) of the pressure before performing vacuum drying and check further gas leak.

After checking first gas leak, maintain 1.0MPa(145Psi) to check further gas leak.

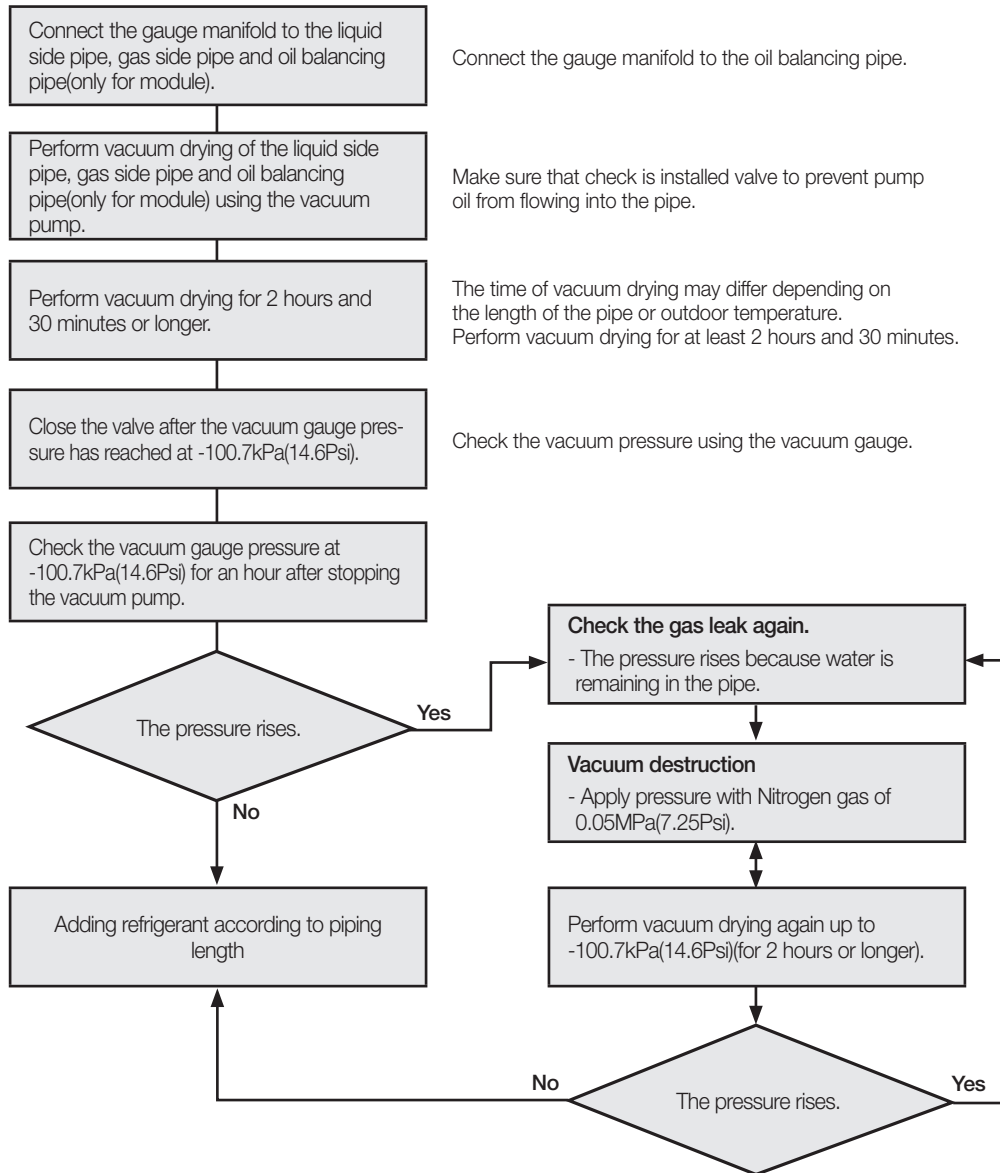


CAUTION

- Perform a Nitrogen gas leak test the service valve of the outdoor unit closed.
- Use both liquid side pipe and gas side pipe when charging the Nitrogen gas.
- If the pipe is filled in a short time with a highly excessive pressure of Nitrogen gas, the pipes may be damaged. Make sure to use a regulator to prevent the high pressure Nitrogen gas over 4.1MPa(594.6Psi) into the pipe.

VACUUM DRYING

- Use the tools for R410A to prevent the inflow of foreign substances and resist against the internal pressure.
- Vacuum system to -100.7kPa(14.6Psi).
- Use the vacuum pump with the check valve to prevent pump oil from flowing backward while the vacuum pump is stopped.
- Close the service valve of the liquid side pipe, gas side pipe and oil balancing pipe completely.



- If the pressure rises in an hour, water remains inside the pipe or there will be a leak.
- **Make sure to perform the airtight test and vacuuming for liquid pipe, gas pipe and high pressure gas pipe after Heat Recovery installation.**
If not, a trouble is caused in the airtight test and vacuum due to obstruction of gas flow.

installing the unit

INSULATING THE REFRIGERANT PIPE

Insulating the refrigerant

- You must check if there is a gas leak before completing all the installation process.
- Use EPDM insulation which meets the following condition.

Item	Unit	Standard
Density	g/cm ³	0.048~0.096
Dimension change rate by heat	%	-5 or less
Water absorption rate	g/cm ³	0.005 or less
Thermal conductivity	kcal/m·h·°C	0.032 or less
Moisture transpiration factor	ng/(m ² ·s·Pa)	15 or less
Moisture transpiration grade	g/(m ² ·24h)	15 or less
Formaldehyde dispersion	mg/L	-
Oxygen rate	%	25 or less

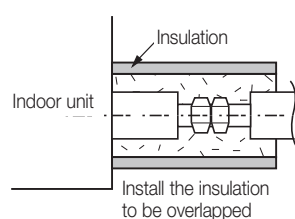
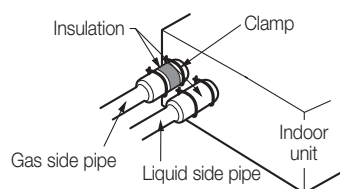
Selecting the insulation of the refrigerant pipe

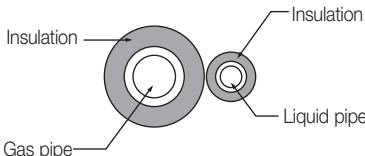
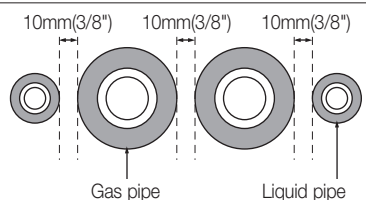
- Insulate the gas pipe and liquid pipe by referring to the thickness of insulator for each pipe size.
- The standard condition is 30°C, less than humidity 85%. If the condition is in high humidity, use one grade thicker.

Pipe	Pipe size (mm)	Insulator(Cooling, Heating)		Remarks
		Standard [30°C, 85%]	High humidity [30 °C, 85% or more]	
		EPDM, NBR		
Liquid pipe	Ø6.35~Ø9.52	9t	←	Heat resisting temperature is more than 120°C
	Ø12.70~Ø50.80	13t	←	
Gas pipe	Ø6.35	13t	19t	
	Ø9.52	19t	25t	
	Ø12.70			
	Ø15.88			
	Ø19.05			
	Ø22.23			
	Ø25.40		32t	
	Ø28.58			
	Ø31.75			
	Ø38.10			
	Ø44.45			
	Ø50.80	25t	38t	

Insulating the refrigerant pipe

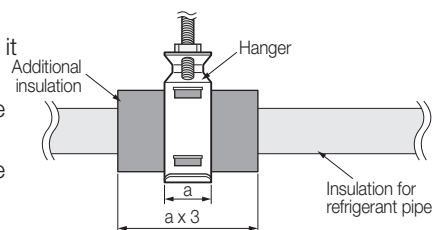
- Be sure to insulate the refrigerant pipe, joints and connections with class 'o' material.
- If you insulate the pipes, the condensed water does not fall from the pipes and the capacity of the air conditioner is improved.
- Check if there are any insulation cracks on the bent pipe.



Pipe insulation	Pipe insulation after insulating EEV kit
- Insulation of the gas and liquid pipes can be in contact with each other but they should not be pressing each other. - When contacting the gas side and liquid side pipe, use thicker insulation.	- When installing the gas side and liquid side pipes, leave 10mm(3/8") of space. - When contacting the gas side and liquid side pipe, use thicker insulation.
	



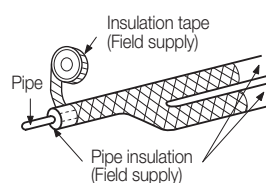
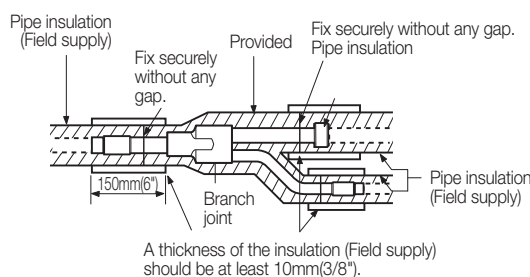
- Install the insulation not to be get wider and use the adhesives on the connection part of it to prevent moisture entering.
- Wind the refrigerant pipe with insulation tape if it is exposed to outside sunlight.
- Install the refrigerant pipe respecting that the insulation does not get thinner on the bent part or hanger of pipe.



Insulating the branch joint

► Y-joint & liquid side of the outdoor unit

- Attach the insulation provided with a branch joint to the insulation purchased individually without a gap. Wrap the connected part with an insulation (purchased in the market) of a thickness of at least 10mm(3/8").
- Use an insulation that should be able to handle the interior temperature over 120°C(248°F) Wrap the branch joint with an insulation of a thickness of at least 10mm(3/8").



※ Attach the adhesive insulation tape to the pipe as shown in the picture after insulating the pipe.

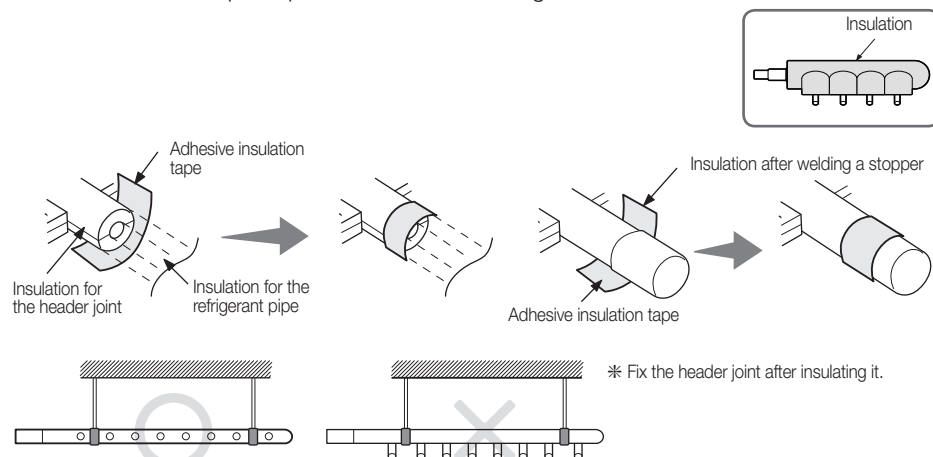
installing the unit

INSULATING THE REFRIGERANT PIPE

Insulating the branch joint

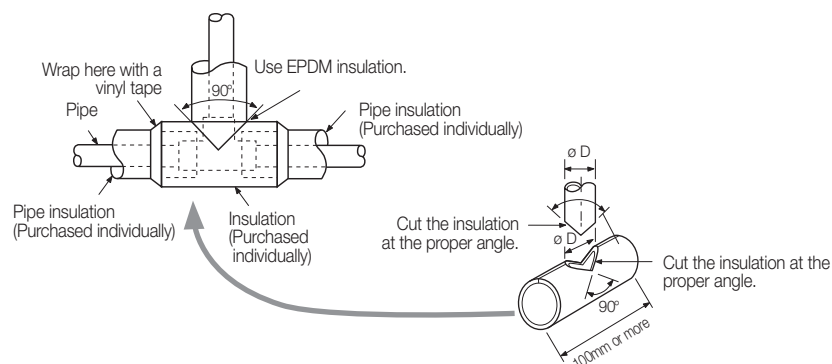
► Header joint

- Fasten the header joint using a cable tie and cover the connected part.
- Insulate the header joint and the welding part and wrap the connected part with an adhesive insulation tape to prevent it from defrosting.



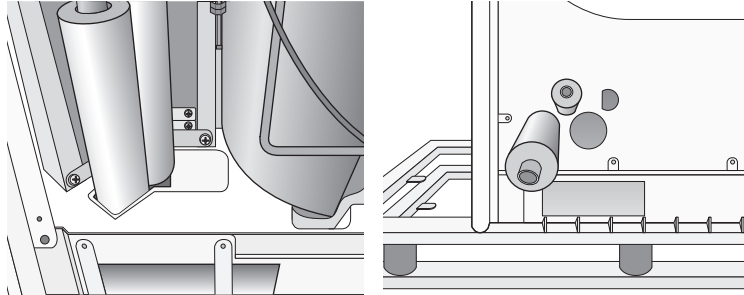
► Outdoor joint & gas side of the outdoor unit

- Use an insulation that should be able to handle the interior temperature over 120°C(248°F).
- Wrap the branch joint with an insulation of a thickness of at least 10mm(3/8") as shown in the picture.
- Wrap the connected part between the Outdoor joint and the gas side of the outdoor unit to prevent it from defrosting.



► Insulating the interior of the outdoor unit pipe

- Insulate the whole service valve of the outdoor unit with a pipe insulation.
- Seal the gap between the outdoor unit pipe and the insulation.
Rainwater and dewdrops may soak through the gap between the pipe and the insulation of the outdoor unit installed on the outside.
- Separate the cover of the pipe and close it after insulation work.
Remove a knock-out hole cover that installed the pipe and use it.
If the extra knock-out hole is open, small animals such as squirrels and rats may get into the unit through the hole and the unit may be damaged.

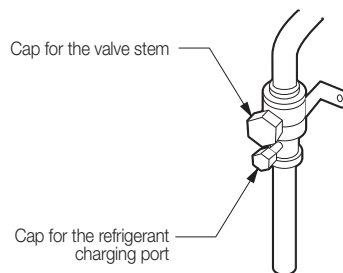


completing the installation and commissioning

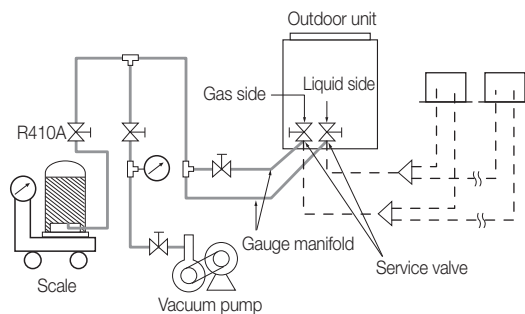
CHARGING REFRIGERANT

Service valve work for gas pipe

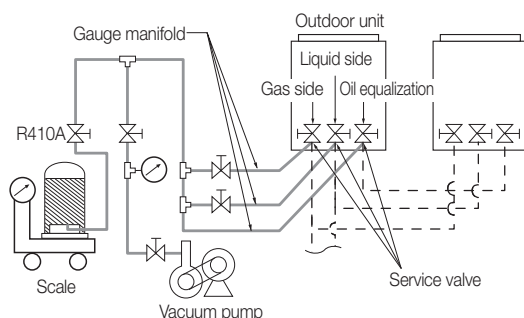
- Block the cap of the service valve after charging the refrigerant.
 - Connection torque of the cap for the refrigerant charging port : $6.0\text{N}\cdot\text{m}$ (4.425lbf·ft)
 - Connection torque of the stem : $25\text{N}\cdot\text{m}$ (18.439lbf·ft).
 - Adjustable torque of the valve stem.
 $\varnothing 19.05\text{mm}(3/4") \sim$: $10.0\text{N}\cdot\text{m}$ (7.375lbf·ft)



When installing 1 outdoor unit



When installing more than 1 outdoor unit



- Open the gauge manifold valve connected to the liquid side service valve and add the liquid refrigerant.
- If you cannot add the whole quantity of the refrigerant while the outdoor unit is stopped, open the gas side and liquid side service valve. Add remaining refrigerant by pressing the refrigerant adding button of the outdoor PCB.



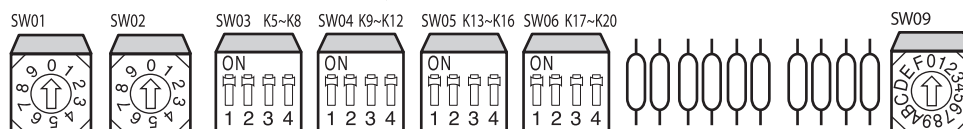
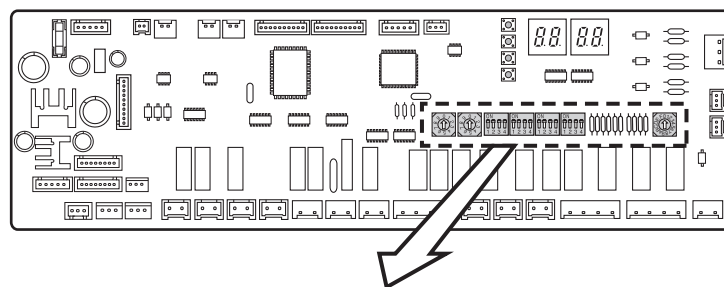
CAUTION

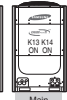
- Open the gas side and liquid side service valve completely after charging the refrigerant. (If you operate the air conditioner with the service valve closed, the important parts may be damaged.)
- When using the modular outdoor unit, open the service valve of the oil balancing pipe.
- Put on safety equipment when charging refrigerant.
- When the refrigerant is being charged, do not perform any other work such as insulation, dip switch setting etc.
- Make sure not to get damaged from the fan when operating the unit while the front panel is being opened.
- Do not heat the refrigerant vessel for fast refrigerant charging when the outside temperature is low during winter season. There is a potential risk of explosion.
- Make sure that the refrigerant does not emit while connecting the gauge manifold to the charging port for heating.
- Close the valve of the refrigerant vessel rapidly after charging refrigerant. If not, a change in the whole refrigerant quantity may occur.

completing the installation and commissioning

SETTING THE OPTION SWITCHES & FUNCTION KEYS

Option switch of the outdoor unit

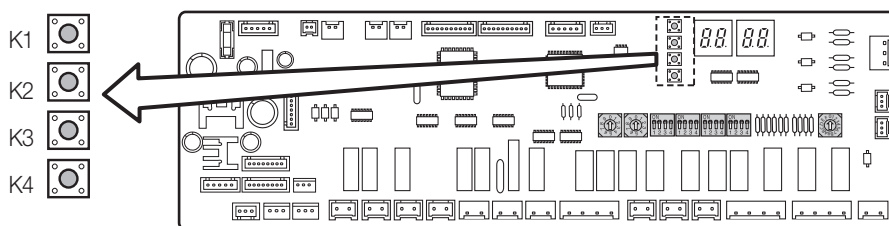


Switch	Setting		Function	Remarks	
SW01/ SW02			Setting total quantity of Installed indoor units SW01 : The tens digit, SW02 : The units digit	Main unit required only Ex) As 12 indoor units were installed, SW01:1, SW02: 2	
SW03	K5	ON	Manual address setting		
		OFF	Auto address setting		
SW04	K9	K10	Target evaporating temperature (°C/°F)	Cooling capacity compensation	
	ON	ON	7~9/45~48		
	ON	OFF	5~7/41~45		
	OFF	ON	9~11/48~52		
	OFF	OFF	10~12/50~54	Heating capacity compensation	
	K11	K12	Target high pressure (kg/cm²)		
	ON	ON	Normal		
	ON	OFF	31.5 kg/cm²		
SW05	OFF	ON	33.0 kg/cm²		
	OFF	OFF	27.0 kg/cm²		
	K13	K14	Outdoor unit's address		7.5HP (Digital unit) 12.5HP (Digital unit) 10HP (Digital unit) Sub 2 Sub 1 Main
	ON	ON	Outdoor unit's address : No 1		
	ON	OFF	Outdoor unit's address : No 2	Sub 1 unit	
	OFF	ON	Outdoor unit's address : No 3	Sub 2 unit	
	OFF	OFF	Outdoor unit's address : No 4	Sub 3 unit	
	K15	K16	Maximum current control		
ON	ON	Standard	Factory default		
ON	OFF	90% of standard peak current value			
OFF	ON	80% of standard peak current value			
OFF	OFF	Not used			
SW06	K17	ON	Since supplying power, first oil return operation happens after 5hrs and then 7hrs.		
		OFF	Since supplying power, first oil return operation happens after 2hrs and then 2hrs.		
	K18	ON	Standard	Defrost period setting	
		OFF	Shorten defrost period by 20% approximately		
	K19	ON	Standard fan step	7.5/10 HP : 19 Steps, 12.5 HP : 23 Steps	
		OFF	Fan step compensation (Maximum step)		
	K20	ON	Normal		
OFF		Night's quite mode			
SW09	E	Setting total quantity of Installed indoor units	Main unit required only		

* Above functions are activated by PCB of "main unit" only.

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Key function



K1	Key function	Display LED
Push 1 st time	Refrigerant charging in heating operation	"K" "1" "BLANK" "BLANK"
Push 2 nd time	Test run in heating mode	"K" "2" "BLANK" "BLANK"
Push 3 rd time	Pump out operation in heating mode (Outdoor unit's address : NO 1)	"K" "3" "BLANK" "1"
Push 4 th time	Pump out operation in heating mode (Outdoor unit's address : NO 2)	"K" "3" "BLANK" "2"
Push 5 th time	Pump out operation in heating mode (Outdoor unit's address : NO 3)	"K" "3" "BLANK" "3"
Push 6 th time	Pump out operation in heating mode (Outdoor unit's address : NO 4)	"K" "3" "BLANK" "4"
Push 7 th time	Open all valve of outdoor unit for vacuum preparation (Outdoor unit's address : NO 1)	"K" "4" "BLANK" "1"
Push 8 th time	Open all valve of outdoor unit for vacuum preparation (Outdoor unit's address : NO 2)	"K" "4" "BLANK" "2"
Push 9 th time	Open all valve of outdoor unit for vacuum preparation (Outdoor unit's address : NO 3)	"K" "4" "BLANK" "3"
Push 10 th time	Open all valve of outdoor unit for vacuum preparation (Outdoor unit's address : NO 4)	"K" "4" "BLANK" "4"
Push 11 th time	Open all valve for vacuum preparation (Total outdoor units, indoor unit and MCU units)	"K" "4" "BLANK" "A"
Push 12 th time	Return to normal view mode	-
K2	Key function	Display LED
Push 1 st time	Refrigerant charging in cooling operation	"K" "5" "BLANK" "BLANK"
Push 2 nd time	Test run in cooling mode	"K" "6" "BLANK" "BLANK"
Push 3 rd time	Pump down operation in cooling mode (All outdoor units)	"K" "7" "BLANK" "BLANK"
Push 4 th time	Pipe checking (Check whether the pipe line of MCU correspond with indoor unit's address in HR system)	"K" "8" "BLANK" "BLANK"
Push 5 th time	Judgment system of refrigerant amount	"K" "9" "BLANK" "BLANK"
Push 6 th time	Return to normal view mode	
K3	Key function	Display LED
Push 1 st time	Reset	

completing the installation and commissioning

SETTING THE OPTION SWITCHES & FUNCTION KEYS

K4	Key function	Display LED	
		SEG 1	SEG 2, 3, 4
Push 1 st time	Outdoor capacity	1	7.5 HP → Off, 0, 8 10 HP → Off, 1, 0 12.5HP → Off, 1, 2
Push 2 nd time	Digital comp loading time	2	Ex) Loading 13 sec → Off, 1, 3
Push 3 rd time	High pressure (kg/cm ²)	3	Ex) High pressure 15.2 (kg/cm ²) → 1, 5, 2
Push 4 th time	Low pressure (kg/cm ²)	4	Ex) Low pressure 4.3 (kg/cm ²) → 0, 4, 3
Push 5 th time	Discharge temperature of compressor 1	5	Ex) 87°C → 0, 8, 7
Push 6 th time	Discharge temperature of compressor 2	6	Ex) 87°C → 0, 8, 7
Push 7 th time	Discharge temperature of compressor 3	7	Ex) 87°C → 0, 8, 7
Push 8 th time	CT sensor value of compressor 1	8	Ex) 2A → 0, 0, 2
Push 9 th time	CT sensor value of compressor 2	9	Ex) 2A → 0, 0, 2
Push 10 th time	CT sensor value of compressor 3	A	Ex) 2A → 0, 0, 2
Push 11 th time	Suction temperature	B	Ex) -5 °C → -, 0, 5
Push 12 th time	Cond_out temperature	C	Ex) 35°C → 0, 3, 5
Push 13 th time	Liquid tube temperature	C	Ex) 35°C → 0, 3, 5
Push 14 th time	Oil temperature sensor on oil balancing pipe	C	Ex) 35°C → 0, 3, 5
Push 15 th time	Sump temperature of compressor 1	F	Ex) 35°C → 0, 3, 5
Push 16 th time	Ambient air temperature	G	Ex) 35°C → 0, 3, 5
Push 17 th time	EVI_in temperature	H	Ex) 35°C → 0, 3, 5
Push 18 th time	EVI_out temperature	I	Ex) 35°C → 0, 3, 5
Push 19 th time	Main EEV1 step	J	Ex) 2000 steps → 2, 0, 0
Push 20 th time	Main EEV2 step	K	Ex) 2000 steps → 2, 0, 0
Push 21 th time	EVI EEV step	L	Ex) 300 steps → 3, 0, 0
Push 22 th time	HR EEV step	M	Ex) 300 steps → 3, 0, 0
Push 23 th time	Fan step (SSR or BLDC)	N	Ex) 13 steps → Off, 1, 3
Push 24 th time	Version		

* Above functions are activated by PCB of "main unit" only.

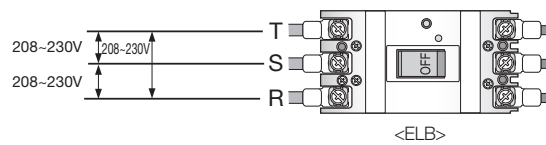
COMPLETING THE INSTALLATION

- Measure the power cable terminal (3-phase: R, S, T) and the grounding of the outdoor unit using a DC 500V ohmmeter before connecting the power.
 - The measured value should be over 30MΩ.



- Never measure the communication terminal to prevent the communication circuit from being damaged.
- Check the short-circuit of the communication terminal using the circuit test system.

- Check the terminal voltage and the phase using a voltmeter and phase test system before connecting the power.
 - R, S, T terminal : 208~230V between wires (R-S, S-T, T-R)



- Turn the switch on after checking the terminal.
- Check the R410A indoor unit is connected.
- **If the power cables, R,S and T, are cross wired, E425 error occurs. Check for proper connection of the power cable.**

completing the installation and commissioning

COMPLETING THE INSTALLATION

- Check the following after the installation is completed.

Installation	Outdoor unit	• Check the external surface and the inside of the outdoor unit. • Is there any possibility of short circuit? • Is the place well-ventilated and ensures space for service? • Is the outdoor unit fixed securely?
	Indoor unit	• Check the external surface and the inside of the indoor unit. • Is the place well-ventilated and ensures space for service? • Check if the center of the indoor unit is ensured and it is installed horizontally.
Refrigerant pipe work		• Is total number of connecting indoor units in the allowable range? • Are the length and the difference between the refrigerant pipes within the allowable range? • Is the Y-joint properly installed? • Is the pipe properly insulated? • Is the quantity of the additional refrigerant correctly weighed in?
Installing the drain pipe		• Check the drain pipe of the outdoor unit and the indoor unit. • Have you completed the drain test? • Is the drain pipe properly insulated?
Installing the wiring		• Have you performed the earthing work 3 to the outdoor unit? • Is 2-core cable used? • Is the length of the wire is in the limited range? • Is the wiring route correct?
Setting ADDRESS		• Are the ADDRESSES of the indoor and outdoor units properly set? • Is the switch setting of the indoor units for centralized control properly made?

FINAL CHECKS AND TRIAL OPERATION

Inspection before trial operation

1. Check the power cable and communication cable of the indoor and outdoor unit.
2. Turn the circuit breaker(3 phases) on 6 hours before initial operation so that the crank case heater can be heated.
3. Check the power supply between the outdoor unit and the cabinet panel.
 - Check the 3 phase power of the compressor T1(Red), T2(White), T3(Black) by the 3 phase tester.
 - Check the 208~230V power with the voltage meter.
4. Once the outdoor unit is turned on, it performs the tracking to check the connected indoor unit and options.
5. Write down the details about the installation on the card attached on the front side of the control box.



- Turn the circuit breaker on 6 hours before initial operation so the crank case heater can be heated enough to start the system.
- If the heater is not heated, the air conditioner does not operate for 2 hours and 30 minutes to protect the compressor.
(‘CH’ is displayed on the PCB display of the outdoor unit.)

Trial operation

1. Run the unit by KEY MODE or controller.
 - 1st- Operate all indoor units by KEY MODE located outdoor PCB.
 - 2nd- Operate each indoor unit run separately by controller.
 - Inspect the compressor sound during the initial operation.
If roaring sound is heard, stop operation.
 - If roaring sound is heard and the pressure does not change, the back-lashing of the compressor may occur.
Check the power supply of the compressor. If the problem occurs continuously, check the compressor power cable.
3 phase: T1(Red), T2(White), T3(Black)
2. Check the indoor and outdoor units' running status.
 - Check indoor unit cooling and heating air flow
 - Each indoor unit controls: air flow direction, air velocity
 - Indoor and outdoor unit's abnormal running noise
 - Proper drainage from indoor unit in cooling mode
 - Check detail running status using S-NET program.
3. If error occurs during trial operation, check the error code of the unit and follow the instruction.
4. Explain to the customer how to use the air conditioner according to the user's manual.
5. Give the installation manual to the user.



CAUTION

Make sure top and bottom cabinets of the outdoor unit are closed before operating.
The unit may not work properly and fail to get S-NET data if the cabinets are open.

